



amateur radio

Vol. 36, No. 1
JANUARY
1968

30c

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8A7	8 in.	50-16,000	8 watts	\$7.50
12A9	12 in.	30-13,000	20 watts	\$19.75

Coaxial Type with "Free Edge" bass cone and horn tweeter

8CX50	8 in.	30-22,000	15 watts	\$23.75
10CX50	10 in.	25-22,000	25 watts	\$36.00
12CX50	12 in.	18-22,000	25 watts	\$62.50

Small Cone	"Free Edge" type:			
5A50	5 in.	50-15,000	8 watts	\$15.00

Professional Series:				
H500	Horn Tweet.	2,000-20,000	15 watts	\$11.10
6M50	6½" Sober	200-6,000	25 watts	\$21.00
8L50	8 in. Woofer	37-4,000	15 watts	\$28.00
10L50	10 in. Woofer	25-3,000	20 watts	\$41.00
12L50	12 in. Woofer	17-2,500	30 watts	\$64.00

Please Note: A7 and A9 types are CX50 in either 8 or 16 ohm Voice Coil. A9 is CX50, TX50 and Professional types, 16 ohms only.

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12 in. T.C.	45-10,000 c/s.	10 watts	r.m.s.	\$10.00
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"AMATEUR RADIO"

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA FOUNDED 1910

JANUARY 1968
Vol. 36, No. 1

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Advertising copy should be forwarded direct to the printers by first of each month.

Publishers:
VICTORIAN DIVISION W.I.A.

Reg. Office: 478 Victoria Parade, East Melbourne, Vic., 3002.

Printers:
"RICHMOND CHRONICLE," Phone 42-2419,
Shakespeare Street, Richmond, Vic., 3121.

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All matters pertaining to "A.R." other than subscriptions, should be addressed to:

THE EDITOR,
"AMATEUR RADIO,"
P.O. BOX 35,
EAST MELBOURNE, VIC., 3002.

Acknowledgments will be sent following the Committee meeting on the second Monday of each month. All Sub-Editors should forward their articles to "A.R." not later than the fifth of each month. Any item received after the Committee meeting will be held over until the next month. Publication of any item is dependent upon space availability, but in general about two months' delay before a technical article is published after consideration by the Publications Committee.

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Members of the W.I.A. should refer all enquiries regarding delivery of "A.R." direct to their Divisional Secretary or to the directors. Non-members of the W.I.A. should write to the Victorian Division, C/o. P.O. Box 35, East Melbourne. Two months' notice is required before a change of mailing address can be effected. Readers should notify any change in the address of their transmitting station must, by P.M.G. regulation, be notified to the P.M.G. in the State of residence; in addition, "A.R." should also be notified. A convenient form is provided in the "Call Book".

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Direct subscription rate is \$3.60 a year, post paid, in advance. Issued monthly on first of the month. February edition excepted.

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NEW SOUTH WALES	
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3595 Kc. a.m. 145.130 Mc. a.m.	
7146 Kc. a.m. 146.000 Mc. f.m.	
53.866 Mc. a.m. (53.950 Mc. f.m. proposed shortly)	
QUEENSLAND	
VK4WI, Sundays, at 0900 hrs. E.A.S.T.	
3595 Kc. 53.950 Mc.	
7146 Kc. 144.35 Mc.	
SOUTH AUSTRALIA	
VK5WI, Sundays, at 0900 hrs. C.A.S.T.	
3.5, 14, 52 and 144 Mc. bands.	
WESTERN AUSTRALIA	
VK6WI, Sundays,	
TASMANIA	
VK7WI, Sundays, at 1000 hrs. E.A.S.T.	
3572 Kc. and re-transmitted by representative stations on	
7146 Kc. 144.1 Mc.	
53.032 Mc. 432.6 Mc.	

THE YEAR IN REVIEW

There's an old adage that says one should never look backwards but always forward to the future. This may be very true in some aspects of living, but in the technical field of Amateur Radio I believe it a good thing to look back and review at least the immediate past in order to more adequately prepare for the future.

This will be my last year as Federal President of the W.I.A. and during my 17 odd years on the Federal Executive I have been working alongside men from all walks of life who have zealously applied themselves in their own spare time to the problems of administering the affairs of the Wireless Institute of Australia. This has resulted in the realisation of many early ambitions and a logical expansion of the administration of the Institute to cope with increasing membership, a growing list of licensed Amateurs, an upgrading of the technical knowhow of Amateurs, the preservation and rationalisation of the regulations governing the operation of Amateur Stations and in general the representation of the Amateur Service in Australia on a basis compatible with the large and well organised Societies overseas.

As in any kind of Society the internal organisation has to keep pace with the times and in this regard it was necessary some years ago to move towards federating the Institute. Last year final agreement between the Divisions of the W.I.A. was reached which will result in the formation of a "Federal Company", the members of which will be the W.I.A. Divisions in each State. The Federal Executive will act as Directors of this Company, fully responsible to, and controlled by, the members, but empowered to act on behalf of its members in such manner that representation of the Amateur Service, the administration of the affairs of the Institute and expansion of Regional activities in the national sphere will become very much more effective. In addition, the Federal Constitution affords a legal protection for Executive members, hitherto enjoyed only by Divisional Council members. To bring this to fruition has taken five years—and looking back it has been five years well spent in providing a more effective and workable constitution commensurate with the requirements of the present and for the future.

The W.I.A. Federal Executive has always been privileged to have a good liaison with the Australian Post Office who administer the use of the radio frequency spectrum in Australia. There have been many problems to solve over the years, but I believe the present co-operative outlook existing between the W.I.A. Federal Executive and the Central Office of the Postmaster-General's Department has never been better. Over the past two years this co-operation successfully produced a complete re-write of the *Handbook for the Guidance of Operators of Radio*

Stations in the Amateur Service, sections of which have appeared in recent issues of the Institute's magazine "Amateur Radio". This has been a major achievement in up-dating the conditions of operation of Amateur Stations to the benefit of licensees and surely, also, it must ease the administrative load of the Department.

This co-operative "channel of communication" between the W.I.A. Federal Executive and Central Office has firmly established means by which regulatory problems involving Amateurs can be dealt with by the Federal Executive, the results of such negotiations being promulgated uniformly to the States through both the P.M.G. State Superintendents and the Divisions of the W.I.A. Such a liaison is a major function of the Federal Executive and Amateurs concerned in regulatory problems are urged to direct details of specific problems to the Executive through their State Divisional Councils and not direct to the Radio Branch in their State. By this means your problem will receive the attention of the Central Office of the Postmaster-General's Department and a uniform decision throughout the States will result.

Looking back over the past year, I believe the image of Amateur Radio has markedly improved. The community service rendered by the Wireless Institute Civil Emergency Network (W.I.C.E.N.) during actual and simulated emergencies has been a powerful influence in engendering this improvement. From a backroom hobby, Amateur Radio has emerged as a recognised communication service, accepted by the Civil Defence Organisations as a valuable asset in its role of protecting public property in times of emergency.

The Youth Radio Scheme (Y.R.S.) fostered by the W.I.A. has also assisted in lifting the image of Amateur Radio. The scheme is now a widespread and successful operation, taking a useful technical training course into the educational system of schools.

That Amateur Radio should have—and deserves—a better image seems to me to be of paramount importance, for the true worth of Amateur Radio to a country is much more than the general public concept of fellows "tinkering around with bits and pieces of equipment" and "hattering away on the air with technical jargon". Amateur Radio is a scientific basis for the technological advancement of any country which supports it, evidenced in Australia by the large number of Amateurs who operate its communication services in one way or another. As an illustration of this, the lecture presented to the I.R.E.E. on December 12 last year on the occasion of celebrating Radio Founders' Day was devoted to the field of professional and commercial communications. The lecture, given by Dr. Allan Butement, VK3AD, Director of Research of the Plessey Group of Com-

panies, was one of those events which plays a vital part in lifting the image of Amateur Radio.

Apart from normal administrative matters, probably the greatest problem facing all Amateur Radio Societies is the preservation of the existing Amateur frequency band allocations. Last year Air Commodore George Pither, VK3VX, joined the Federal Executive as the W.I.A. official Federal Liaison Officer. His major task—when the time comes—will be to represent the W.I.A. at conferences at home and abroad which will deal with the allocation of frequencies to the Amateur Service. He is an Amateur well equipped to carry out this important work, being experienced in top-level diplomacy and having a wide knowledge in the field of communications. Pending the requirement of his services officially, Air Commodore Pither is assisting in the organisation of the proposed Australian Intruder Watch Service, details of which have appeared in recent issues of "Amateur Radio" magazine. The Service will be implemented officially early in the new year for which we still require the services of many more Amateurs who are prepared to devote a few hours each week to monitoring the bands if the scheme is to be as successful as it is in the United Kingdom and the United States of America. This Service is being implemented because of a direct request last year from the International Amateur Radio Union of which the W.I.A. is a member.

Finally, and important too, is the work done by the Federal Executive in the area of liaison and assistance to Amateurs in Region III, neighbouring countries. During last year many editorials, articles and broadcasts relating to this matter were undertaken, designed to focus attention on the urgent necessity for the W.I.A., as one of the largest of the Region III. Amateur Societies, to take an active part in promoting Amateur Radio in this Region (S.E. Asia and Oceania).

I believe we have made a good start but there is a lot of work to be done if Region III. is to play its part at future I.T.U. Conferences. The Region I. and Region II. Amateur Societies are both large and well organised. In Region III. there are many countries which have little or no Amateur Radio activity. This spells danger to Amateur frequencies if the I.T.U. examines frequency allocations on a Regional basis as it appears it well might do. I am therefore of the opinion that the role of the W.I.A. is to do everything in its power to assist the under developed countries, particularly in the formation of Amateur Radio Societies. By this means a stronger and united front can be presented in defence of the Amateur Service frequency requirements.

1968 was a year of progress; 1968 must be a year of achieving further results from this progress. With the continued dedication of those who enjoy taking up administrative posts with the W.I.A. we will no doubt achieve our aims for the benefit of the Amateur Service.

—G. Maxwell Hull,
Federal President

A LOW POWER TWO METRE S.S.B. TRANSMITTER

STEPHEN GREGORY,* VK3ZWG

ONE of the first things noticed about v.h.f. s.s.b. was the lack of operators of this mode. There are many circuits, cut and tried, to convert low band s.s.b. to v.h.f., however these so-called low level devices usually required one or two watts drive to make them work properly.

The usual output-attainable from an exciter unit after mixing is only in the region of hundreds of milliwatts, so most of the mixing circuits using triodes and cathode injection are impossible to get going using low level excitation.

This is a circuit using a low level exciter and can be used with any filter or phasing generator running around 5 Mc.

As with an article published in "A.R." by Keith VK2ZAU, there are no arguments offered for or against s.s.b.; this article is primarily to assist any person over the pitfalls and problems encountered by the author during construction.

The fact that this rig uses a commercial generating unit is of no importance as I have since built a phasing type unit for use on 52 Mc. and there is little difference in performance except the speech quality of the phasing type is possibly better than the filter type.

144 Mc. was chosen as a starter in preference to 52 Mc. as greater experimentation with "on-air" transmission can be carried out. Channel 0 is an old story over here, yet I don't get the bad t.v.l. reports as much as I used to on 52 Mc. running 20 watts s.s.b., where previously from 10 watts of a.m.

The exciter is a low level heterodyne type, the first mixer combines the 5 Mc. sideband with the second harmonic of the crystal oscillator to give the first source at 34 Mc. This is then mixed with the eighth harmonic of the crystal

oscillator to give 144 Mc., which is amplified in a self biased amplifier to give about 10 watts peak.

The oscillator/buffer is fairly conventional, being fed from a 150 volt regulated supply, excepting the anode of the pentode, which is fed from normal h.t.

It helps greatly to have a rock steady regulated supply, however for mobile use I found that it was a great advantage to have all the OB2 regulated tubes on the main chassis.

Problem one was the choice of a suitable tube with sufficient sensitivity to give a reasonable output at 34 Mc. Several American triode circuits were tried using a 12AT7, 12AY7 and 6BL8, but all failed to produce sufficient output for direct coupling to the second mixer.

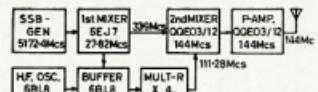


FIG.1. BLOCK DIAGRAM.

At one stage, I settled on a 12AT7 cathode follower-mixer and a 6EM7 amplifier at 34 Mc., however the gain of the 6EM7 caused the 27.820 to be rather annoying when tuning up the rig.

After selecting a 6EJ7, which is designed for use in the 30-40 Mc. region, I finally obtained enough output to light a pea lamp with full carrier wound in. This, I may hasten to add, occurred at approximately 3 a.m. one Sunday morning, several weeks ago, after many hours of so-called trial and error circuits.

I carried out experiments with a 3/0 pF. trimmer at C1 and although

a greater output could be obtained with greater C, the harmonic 27.820 also increased accordingly.

Finally, approximately 20 turns $\frac{1}{4}$ in. diam. with a 7/70 pF. across it was fitted in series with the mixer anode to trap out the 27.820 Mc. signal. The overall efficiency of the circuit now increased and one small torch globe burnt itself out.

The 6EJ7 quadrupler was mainly chosen due to the author being in t.v. servicing and an abundance of these tubes resides around the QTH. The 52 Mc. rig uses five of these tubes and they are very sensitive as a class A amplifier for which they were designed originally.

Link coupling was used to the 3/12 tuned circuit, also at 34 Mc. Several methods were tried to induce the 112 Mc. signal into the 3/12 mixer. The cathode link idea ("A.R." March '67) proved okay, but a greater output was obtained when the quadrupler was peaked to resonance using a coil about $\frac{1}{2}$ in. diam. for high Q and the signal injected by two 10 pF. capacitors into the grids. Surprisingly, the mixing source was fairly low in output (112 + 27 = 139 Mc.), however series tuned traps were used. These consisted of 6 turns $\frac{1}{4}$ in. diam. 16 gauge with 3/30 pF. across them.

VK3ZPX found it necessary to trap an annoying harmonic in this way which appeared as pure unintelligible garble outside the band.

It must be pointed out that spurious signals in a linear amplifier can completely "foul up" an otherwise perfect sideband signal due to these weird sum and difference frequencies plonking a bit of spurious signal a few kilocycles up the band.

I worked on the principle that if there was an unaccountable signal

(Continued on Page 18)

* 22 Moodie Street, Caulfield, Vic., 3162.

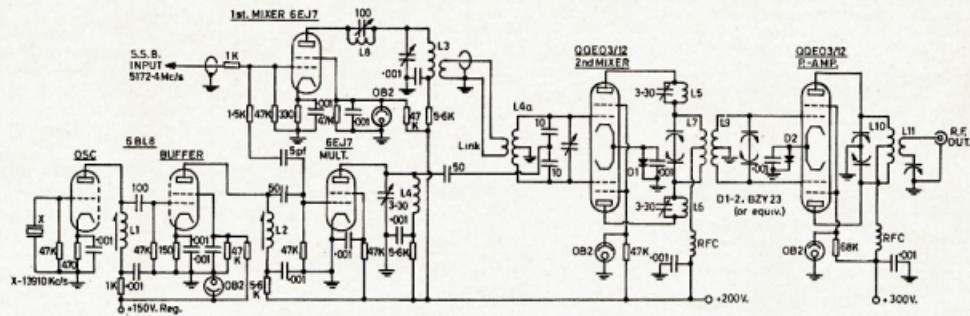


FIG.2. CIRCUIT FOR LOW POWER 2 METRE S.S.B. TRANSMITTER.

D1, D2—BZY93 or equivalent.

L1—22 turns $\frac{3}{4}$ in. diam. a.w./wound 16 gauge, s.t. 20 s.w.g.

L2—22 turns $\frac{3}{4}$ in. diam. s.t. 20 s.w.g.

L3—3 turns $\frac{3}{4}$ in. diam. former 20 s.w.g. Link, 2 turns on cold end.

L4—4 turns $\frac{1}{4}$ in. diam. 16 gauge, c.t. 2 turns.

L4A—20 turns $\frac{3}{4}$ in. s.t. c.t. 10 turns, 20 s.w.g.

Link, 2 turns in centre.

L5, L6—Trap, 35 turns $\frac{1}{4}$ in. diam., c.t. 2 turns, 16 gauge.

L7—4 turns $\frac{1}{2}$ in. diam., c.t. 2 turns, 16 gauge.

L8—Trap, 35 turns $\frac{1}{2}$ in. diam., c.t. 2 turns, 16 gauge.

L9—4 turns $\frac{1}{2}$ in. diam., c.t. 2 turns, 16 gauge.

L10—2 turn link to output.

L7—4 turns $\frac{1}{2}$ in. diam. 16 gauge, c.t. 2 turns.

L8—Trap, 35 turns $\frac{1}{2}$ in. diam., 100 pF.

L9—4 turns $\frac{1}{2}$ in. diam., c.t. 2 turns, 16 gauge.

L10—4 turns $\frac{1}{2}$ in. diam., c.t. 2 turns, 16 gauge.

L11—2 turn link to output.

A Simple Step Attenuator*

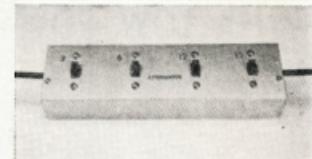
BYRON GOODMAN, W1DX

THE attenuator to be described is for use between antenna and receiver, to reduce overloading by extremely strong signals.^{1,2,3} Attenuation between 3 and 33 db. can be obtained in 3-db. steps by closing one or more of four slide switches. A more elaborate design might include 1 or 2-db. intervals, but the sole intent here was to make the device simple and inexpensive. Common 10% tolerance composition resistors are used.

Referring to the circuit diagram in Fig. 1, when all of the switches are in the "up" position there is a direct connection between P1 and P2. Moving S1 "down" introduces a 3-db. pi-section

circuit" position was available at each switch. Opening one switch, the attenuation was 39 db. (measurement at 28 Mc.). As the switches were progressively opened, the additional attenuation per switch decreased, and opening the last switch introduced only 12 db. additional attenuation over that obtained with three switches open. It is unlikely that the next step (24 db.) is practical with this simple construction, and that's why two 12-db. sections are included.

The unit was built on a piece of 5" x 8" sheet aluminium bent into a 1½" deep and 2" wide channel. The switches are mounted 2" apart. Co-axial line



an accurate attenuator), an audio oscillator and oscilloscope, or a source of d.c. and a voltmeter.

Connect a 50 ohm resistor or other termination across the output (receiver) plug. The voltage at this point (measured by receiver, oscilloscope or voltmeter) should be 0.71 times the input voltage for the 3-db. section, 0.50 times the input voltage for the 6-db. section, and 0.25 times the input voltage for the 12-db. section. But again, if it doesn't work out right on the button, so what? It will still work and it will help you on more than one occasion when the QRM gets heavy.

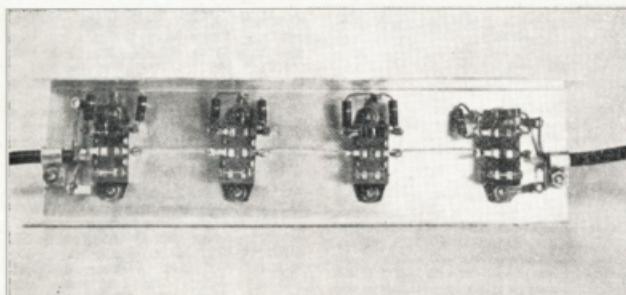
(Anyone interested in a more precise step attenuator—and who has the facilities for measuring r.f. resistance values—can design his attenuator sections from the following:—

$$R_{\text{series}} = \frac{A^2 - 1}{2A} R_0$$

$$R_{\text{shunt}} = \frac{A + 1}{A - 1} R_0$$

where R_0 = characteristic resistance, e.g. 50 ohms.

A = reciprocal of output/input voltage ratio; e.g. 1.414 for 3 db., 2.0 for 6 db., 4.0 for 12 db., and so on.)



Resistor networks for the attenuator are mounted on the switches and grounded to lugs held by the switches. Note outer conductor of co-axial cable is fanned out and grounded either side of switch.

pad, moving S2 introduces 6 db. attenuation, and S3 and S4 each add 12 db. attenuation. When two or more switches are "down" the attenuation is the total of the attenuations for the active sections.

It should be noted that the design is based on the assumption that the receiver looks like 50 ohms; if it is higher, the lower values of attenuation will be less than stated above. But just because your receiver doesn't look like 50 ohms (or because you don't know what it looks like) doesn't mean the attenuator won't work; it will, but the attenuation values will be different. So what?

The use of the 12-db. maximum section is based on measurements made when the switches were first installed. They had been wired for the straight-through connections but no attenuating resistors had been installed; an "open

(RG-58/U) was secured at each end by small aluminium cable clamps bent from scrap aluminium. The ends of the co-axial lines were terminated in a BNC plug for the receiver and an SO-239 receptacle and UG-177/U hood for the antenna connection. Obviously these connections would vary with the station and application.

Using a signal generator and receiver for measurements at 28 Mc., no differences in attenuation could be detected with a bottom plate on or off.

Anyone who wishes to confirm the attenuations of the various sections can use a signal generator (it must have

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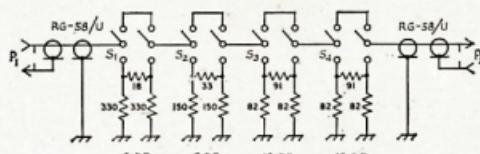


Fig. 1.—Circuit diagram of the Step Attenuator. All resistors are 1/2 watt composition.

P1, P2—See text.
S1 to S4—D.p.d.t. slide switches.

* Reprinted from "QST," August 1967.

¹ Andrade, "Recent Trends in Receiver Front-End Design," June, 1962; "A.R." Jan., 1964.

² Talley, "Receiver Front-End Attenuator," "QST," January, 1964.

³ The ITT Mackay Marine 3010-B Receiver, "QST," April, 1967.

A MOBILE POWER SUPPLY FOR A GALAXY III.

G. A. CLIPSHAM,* VK2SJ

THIS supply, as designed, is large enough to power my transceiver to full output. With minor adaptation it would suit a Swan or similar unit. Using new materials throughout, it cost approximately \$45 to build. The design is not necessarily the final word in engineering, and just grew as experiments proceeded. For instance, one half of the supply operates with grounded emitters, whereas the other has grounded collectors; one switches at 1,000 c.p.s., but the other at 350 c.p.s.

If I were starting again I would probably use transformer cores with similar thickness tape, but that would involve changing the turns per volt parameters if they were both to operate at the same switching frequency. However, once I had purchased cores I decided to use them irrespective, and hence the dissimilarity between the two halves of the supply. Any constructor knowing what he is about could easily adjust this if he wished.

The supply consists of two parts; one providing all voltages except that needed for the final amplifier. Using the data given below, provision is made for 800 volts at 400 mA. (peak), 325 volts at 200 mA., and 100 volts at 35 mA.

Firstly, obtain two H.C.R. toroidal cores, size 7C and 10C, the smaller one with a 0.002" tape and the other with 0.004" tape. These are available from Telcon, at 17 Wyndham St., Alexandria,

very carefully between the high voltage winding and the primary. Any breakdown here will almost certainly destroy the transistors. Use hook-up wire tails on all the fine windings for convenience and it is a good idea to label each end as you go. It can be very confusing later if they get mixed.

About half a pound each of 14 and 16 s.w.g. and one pound of 27 s.w.g. wire is more than enough. Buy the better gold coloured enamelled insulation; it is much tougher and more durable than the dark coloured stuff.

WINDING DETAILS

Small Transformer with 7C Core:

Primary: 2 x 19 turns wound bifilar—16 s.w.g. d.c.c.

Feedback: 2 x 24 turns wound bifilar—27 s.w.g. enamel.

100 volt winding: 85 turns—27 s.w.g. enamel.

325 volt winding: 325 turns—27 s.w.g. enamel.

Larger Transformer with 10C Core:

Primary: 2 x 24 turns wound bifilar—14 s.w.g. d.c.c.

Feedback: 2 x 27 turns wound bifilar—21 s.w.g. enamel.

800 volt winding: 800 turns—27 s.w.g. enamel.

I used 2N441 transistors and six are required. They are available from Anodeon Sales at 443 Concord Road,

they are operating under favourable conditions in this design anyway.

The forward bias network used is somewhat unusual and was purloined direct from "CQ" magazine. It uses a 5 ohm resistor in series with a 24 volt 50 mA. lamp. Because the resistance of the lamp is under 50 ohms when cold, a high forward bias is presented to the transistors at switch-on, which makes for instantaneous starting, but once heated, its resistance rises to something like 500 ohms which keeps the primary current very low in the event of a short circuit on the load and eliminates thermal runaway. If suitable lamps are not available, a resistor of 500 ohms should be satisfactory.

The whole supply is housed in a 16 s.w.g. aluminium case about 7" x 6" x 5". This size was dictated by the need to accommodate the heat sinks with their fins running vertically when mounted on the firewall of my Holden car. A wrinkle here worth knowing (VK2BAE passed it on to me): purchase a pint of wrinkle finish paint and half a pint of special thinners from Brolite at Ralph St., Alexandria, cost about \$1.50.

A proper spray gun is ideal, but I used a Flit gun with very satisfactory results. First drill all the necessary holes, then remove the components and degrease the metal in a mild solution of caustic soda for a few minutes. Thoroughly wash and dry, and then spray with a full coat and bake it in the family oven for about half an hour at 265°F. The result is very professional and it won't be long before all your gear sports a similar finish.

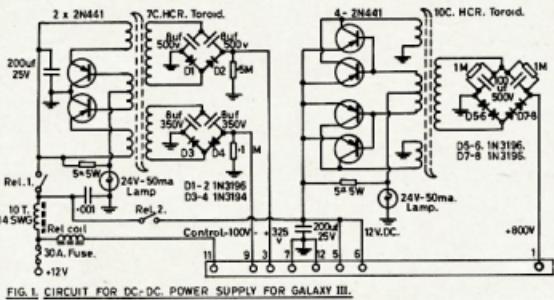
My power supply proved to be quite free of noise. I used a small choke in the primary lead as indicated in the circuit, about half an inch in diameter and then cemented a small piece of ferrite core inside to increase its efficiency. Use at least 7/0.0036" wire from the battery. The converter will draw not less than 30 amps. on peaks, so watch that battery, especially if you have an automatic car!

ACKNOWLEDGMENT

Acknowledgment is due to VK2WT and VK4ZAX for helpful assistance.

ADDITIONAL READING

A.R.R.L. Mobile Handbook, third edition, pages 180-182.
"Choice of a Magnetic Core for Use in D.C. Converters," Telcon.
"CQ" Magazine, May, June and July, 1963.
"Philips Minimatt Digest," Vol. 2, Nos. 1, 2, 6 and 9.
"Amateur Radio," Dec. 1965 (this is a must).



N.S.W., at approximately \$5.50 the pair. Both A.R.R.L. Mobile Handbook and "Amateur Radio" for December 1965 cover the winding operations well and the reader is referred to them. However, I found it easier to wind the high voltage, and consequently fine wire, on first, then the heavy primary, and finally any other windings needed.

The primary makes the winding very bumpy and it is better to cover the core with a layer of paper tape (it is easier to lay the turns if a light coloured tape is used) and then insulate each layer as it is put on carefully using an ice-cream stick as a shuttle. Insulate

Rhodes, N.S.W., and whilst ordering procure the necessary diode rectifiers as well, together with three Delco heat sinks, Part No. 7281361. These are very suitable under all conditions and come already drilled for use at about \$2.25 each. Incidentally, when ordering don't forget to mention "for use in d.c.-d.c. converters" and sales tax is only 12 1/2%.

Most published circuits specify to use matched transistors when using them in parallel. Otherwise small 0.1 resistors are placed in the common feed to each emitter or collector as necessary. I did not use them as the load split nicely and there was no evidence of uneven heating, but then



THE MILLIMATCH*

A SENSITIVE VERSION OF THE MONIMATCH MARK II.

LEWIS G. McCOY, WIICP

IN the last year or so the cost of transistors that can be used in transmitters has dropped to a point where more and more Hams, both newcomers and old timers, are becoming interested in low-powered transistored rigs. And by low power, we mean transmitters whose output is measured in terms of milliwatts, not watts.

Several very low power transmitters have recently been described in "QST," and our mail bag attests to the popularity of these units. Such equipment is easily portable, and many Hams, particularly v.h.f. operators, have discovered that extremely low power can be lots of fun.

One problem in using very low powered transmitters is the difficulty in making antenna adjustments or checking output when tuning up. There "just ain't any" test equipment available to do the job. The regular garden variety of reflectometer, such as the Monimatch, isn't sensitive enough. The Millimatch, described in this article, provides adequate sensitivity—even for rigs with output levels as low as 10 milliwatts!

THE MILLIMATCH—WHAT IT IS

The Millimatch is similar to the Monimatch Mark II,¹ except that a transistor current amplifier has been added. Fig. 1 is the circuit of the Millimatch. Of all the reflectometers that have been described since the original Monimatch, the Mark II, is one of the best designs for accuracy of readings at v.h.f., up to and including the 144 Mc. band. For the benefit of the newcomer who is not familiar with reflectometers, a short description is in order.

When you attach a co-axial line of, say, 50 ohms characteristic impedance to an antenna and feed power through it to the antenna, a certain amount of power will be reflected back down the line toward the transmitter if the impedance of the antenna is anything other than 50 ohms. The larger the difference between the impedance of the line and the impedance of the antenna, the greater the ratio of reflected power to forward power. One method of checking this ratio is with a reflectometer, which, when inserted in the co-ax line, in effect samples the forward and reflected voltages separately. From these relative voltage values the relative forward and reflected power, as well as the standing wave ratio on the line, can be determined.

Referring to Fig. 1, the J1 end of the Millimatch is connected to the transmitter and the J2 end to the antenna. When the transmitter is turned on, r.f. current flowing along the conductor between the fittings induces voltages in

L1 and L2. The voltage induced in L1 is proportional to the forward line voltage, and the voltage induced in L2 is proportional to the reflected line voltage. The L1 voltage is rectified by CR1, and the d.c. is applied to the base of Q1. Q1 amplifies this d.c., which is then read on M1. When S1 is switched to read reflected voltage, the voltage in L2 is rectified by CR2 and fed through the amplifier.

The standing wave ratio on the coaxial line is found by first switching S1 to read forward voltage and adjusting sensitivity control, R6, so that M1 reads exactly full scale; then S1 is switched to reflected voltage and the reading noted. Let's assume the meter is calibrated from 0 to 10 in even divisions. The formula for determining the s.w.r. is quite simple:—

$$\text{SWR} = \frac{V_o + V_r}{V_o - V_r}$$

where V_o is the forward voltage and V_r is the reflected voltage. For example, suppose that we set R6 so that M1 reads full scale, or 10, in the forward position, and when we switch to reflected we have a reading of 3. This would amount to

$$\frac{10 + 3}{10 - 3} = \frac{13}{7} = 1.8 \text{ to } 1.$$

However—and this is a point that some Amateurs overlook—many reflectometers are not truly accurate instruments for measuring s.w.r. They are excellent for showing when a matched condition (an s.w.r. of 1 to 1) exists, but under any other condition the voltage readings are not dependable, because of poor linearity of the diode rectifiers used at CR1 and CR2. If the diodes were perfectly linear over the entire range of reflected and for-

Fig. 1.—Circuit diagram of the Millimatch. Resistances are in ohms (K equals 1,000). The 0.001 μ F capacitors are disc ceramics.

CR1, CR2—IN34A germanium diodes.
J1, J2—Co-ax. chassis receptacle, type SO-238.

L1, L2—See text.

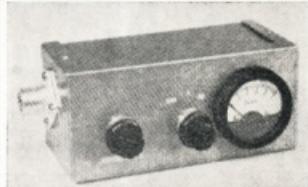
M1—0-1 milliammeter. A more sensitive type can be used, but is not recommended.

R1, R2—150 ohms, $\frac{1}{2}$ watt carbon or composition for 50 ohm bridge, 100 ohms for 75 ohm unit.

R3, R4—18,000 ohms, $\frac{1}{2}$ watt.

R5—10,000 ohm control, miniature type.

S1—2-pole, 3-position switch.



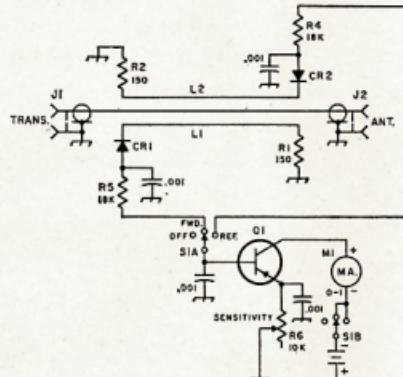
This is the completed Millimatch. At the left is the sensitivity control, R6. S1 is in the center, and M1 at the right.

ward voltages being measured, the formula above would give accurate s.w.r. checks. If sufficient resistance is used in series with the diodes, their output tends to become more linear, but the sensitivity is reduced. We used R4 and R5 to improve the accuracy, and the loss in sensitivity is more than made up for by the amplifier, Q1.

In the Millimatch, another factor that gets into the act to upset the accuracy of s.w.r. readings is the linearity of the transistor used as an amplifier. However, regardless of the accuracy of s.w.r. readings, the bridge is excellent for showing when a match is achieved. Additionally, by setting S1 in the forward position, the relative r.f. output of the transmitter can be observed on M1. This is a valuable tool when tuning up a transmitter.

CONSTRUCTION INFORMATION

The Millimatch is enclosed in a 2" x 2 1/4" x 5" minibox. The transmission-line section consists of an inner conductor (a piece of 1/8" o.d. copper tubing, 4 1/2" long) and two pieces of copper flashing for the outer conductor. These two pieces measure 1" wide and 4 1/2" long, plus a 1" lip at each end for mounting under the screws that secure J1 and J2. Separation between the copper strips and inner conductor is maintained by two insulated spacers, Fig. 2. These spacers also serve to space the pickup wires L1 and L2 at the correct distance from the inner conductor.



* Reprinted from "QST," August 1967.

¹ McCoy, "Monimatch Mark II," "QST," Feb. 1957; "A.R." April 1957.

Any available insulating material of reasonably low loss, such as bakelite or polystyrene, can be used for the spacers.

Mounted on the front of the minibox are M1, S1 and R6. Almost any of the miniature panel meters available from radio distributors can be used for M1 as long as they don't protrude more than $\frac{1}{4}$ " behind the panel. We checked several types and found that most of them protruded 1" or less.

Mount J1 and J2 as close to the rear of the minibox as possible, as shown in the photographs. Slide the spacers over the copper tubing and then tin the inside ends of the tubing with solder. Also tin the inner-conductor terminals of J1 and J2. Slide the ends of the tubing over the conductor terminals and solder. You can then mount the copper strips in place.

The pickup wires, L1 and L2, are $\frac{3}{8}$ " lengths of No. 14 tinned wire. The wires are centered in the spacers as shown in the photograph and cemented in place with Duco cement.

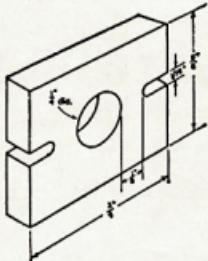


Fig. 2.—Dimensions of the insulating spacers used to hold bridge wires and outer conductor strips in place.

R1 and R2 are $\frac{1}{2}$ watt resistors and must be carbon or composition, not wire-wound. For a 50 ohm bridge, use 150 ohm resistors, and for a 75 ohm unit use 100 ohm resistors. (No, that last isn't a typographical error!) The ends of the resistors that are soldered to L1 and L2 are $\frac{1}{2}$ " long. Tin the ends of the pickup wires and the ends of the resistors with solder and solder the resistors in place. Don't overheat the resistor as too much heat can change the value. The remaining ends of the resistors are soldered to lugs mounted under screws that hold J1 and J2, keeping the leads as short as possible.

When connecting CR1 and CR2 to the pickup wires, use a heat sink on the lead between the body of the diode and the lead being soldered. Too much heat can easily ruin the diode.

We used a transistor socket for mounting Q1, but it could be mounted by its own leads if desired. The $\frac{1}{2}$ volt battery was installed by soldering wires to both ends, no holder being used. Some penlite cells have a pressure-type contact at the base, or negative, end. This is a circular plate that must have pressure on it to make contact. If you get that type battery, take a knife and slice away the plate to get at the actual base of the battery.

Almost any p.n.p. type transistor will work for Q1. We tried several types

from the junk box—2N114, 2N117, 2N705, and 4JD1A67—and they all had more than adequate gain. As a matter of fact, we had removed about 50 different transistors from surplus computer boards, and every p.n.p. type had adequate gain for full-scale deflection of M1 with 25 milliwatts input at 28 Mc.

TESTING AND USING

THE MILLIMATCH

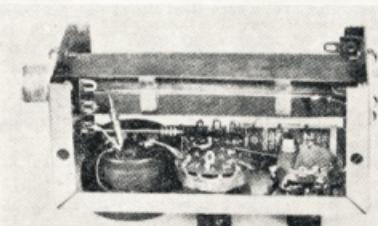
Connect the Millimatch to your transmitter, using 50 or 75 ohm co-ax, as required. Leave the antenna end of the bridge unconnected. Turn on the rig, switch S1 to forward and set the sensitivity for about half-scale reading. Next, switch to reflected. The readings for forward and reflected should be about the same. Next, if you want to check the accuracy of the bridge, connect a 1 watt carbon resistor of the appropriate value, 50 or 75 ohms, between the inner hole and outer shell of J2. Switch S1 to forward and adjust

the sensitivity to full scale. Then switch to reflected and the reading should drop to zero.

You may find that when you first turn on the Millimatch, you will get a slight reading on the meter without the transmitter being on. This is the "no-signal current" in the transistor. Whatever the no-signal current reading is, and it will be very small, assume this value as "zero" when the transmitter is turned on and worked into a matched load.

You can check the accuracy of the s.w.r. readings with the formula previously mentioned by using dummy load resistances of various values. For example, a 150 ohm resistor will represent a 3 to 1 s.w.r. with a 50 ohm

As we stated earlier, the Millimatch will enable you to match your antenna system, and just as important, provide an excellent output indicator for that flea-power rig.



This shot shows the "innards" of the Millimatch. Pickup line L1 is mounted in the grooves on the insulated spacers. CR1 is at the left. At the right, just in front of the sensitivity control, is Q1 in its socket. The $\frac{1}{2}$ volt penlite cell is at the rear.

CHANGE IN RADIO SYSTEM FOR LOW POWERED M.F. AND H.F. RADIOTELEPHONE SERVICES

(Statement by the Director-General Posts and Telegraphs)

The Director-General, Posts and Telegraphs, Mr. T. A. Housley announced recently that following discussions between representatives of the Post Office, the Royal Flying Doctor Service, other outpost services, and the radio industry, it has been agreed that radio stations in the outback networks should change from double-sideband to single-sideband radio transmission.

He said that the programme agreed upon for the change provided for all control stations in the outpost services to be equipped for operation on single-sideband by 1st July, 1975. They would operate both d.s.b. and a.s.b. equipment over the following five years until 1975. In addition, all outpost stations will be required to install s.s.b. equipment during this five-year period. The use of double-sideband transmissions would be discontinued as from 20th June, 1975.

Mr. Housley explained that the need for such a change arose because of the heavy demand in Australia and other parts of the world for new radio stations to be accommodated in the medium wave and high frequency bands.

He said that it was important that a service such as the R.F.D.S., on which so many people in the outback depended, should operate under the best possible conditions.

The increasing demand for radio services was already causing a serious overcrowding of frequencies and unless the change from d.s.b. to a.s.b. made a chaotic situation could eventually occur.

The Director-General said that many of the existing lower powered, double-sideband transmitters and receivers had already been in use for many years and would in any case be due for replacement in the near future.

Mr. Housley added that in the circumstances the Post Office considered that the time was now most suitable to implement a conversion from double- to single-sideband operations for all medium and high frequency, lower powered radiotelephone services.

The conversion would affect fifteen major control stations including twelve in the Royal Flying Doctor Service, and about 4,600 outpost stations in the outback, all operating across two-thirds of the continent.

The other outpost services involved included those of the Bush Church Aid Society (Ceduna, South Australia), the Queensland Ambulance Transport Brigade (Cairns Division), and the services based on the O.T.C. coast station at Darwin.

Mr. Housley said that the conversion would be the first major change in the system of radio services in Australia for many years since radiotelephony replaced the earlier experimental Morse systems introduced by the Australian Inland Mission nearly forty years ago.

The adoption of the new system paralleled similar developments overseas and fell into line with recommendations made by a committee of the International Telecommunications Union and the Frequency Allocation Review Committee, which sat under the chairmanship of Sir Leonard Huxley by the Australian Government in 1960.

Both committees reported that one of the most important methods of achieving economy in the use of the radio spectrum was in the replacement of double-sideband by single-sideband systems and discontinuance of the use of double-sideband systems by 1970.

The Director-General pointed out that all Australian radio services have been operating in accordance with these recommendations for some years, but because of the highest cost and limited availability of suitable single-sideband equipment the Post Office had been unable until now to extend the change to the lower powered services. Single-sideband transmitters and receivers were now readily available at a more economical price.

(This change does not apply to the Amateur Service.—Ed.)

SSB

Sub-Editor: PHIL WILLIAMS, VK5NN
37 Winns Rd., Coromandel Valley, 5051

SIDEBANDERS GATHERING

The planned Sidebanders Gathering at Hamilton, Vic., for the long weekend at the end of January 1968 looks as if it will be successful again, and Ern VK3AEM informs me that bookings are coming in fairly quickly now. By the time these notes are published the accommodation available at Hamilton may be all reserved and any others wishing to attend will probably have to make their own arrangements for accommodation at neighbouring towns or bring their own caravans.

THE SIDEBAND LIST

Perhaps some of the newer sidebanders may not be aware that Comps VK5EF, one of our oldest exponents of the s.s.b. art, keeps a very complete log of all VK Amateurs on s.s.b. and their equipment. If you are not sure

LOCAL POWER SUPPLIES FOR TRANSCEIVERS

A few tips are in order for those who wish to construct power supplies for imported transceivers. I prefer to use one transformer to supply the filaments (usually 12 volts a.c. at up to 6 amps) and bias supply (voltage double from a 40v. winding). Another transformer is then used to supply the 700 to 800 volts for the final by full wave bridge rectifying a 300-0-300 volt winding into a large capacitive filter of more than 50 microfarads. The minor h.t. required is usually then obtained from the centre-tap of the same transformer through a two-section choke input filter to give about 260 volts.

The minor h.t. on some of the transceivers is rather hungry, requiring some 200 milliamps, so one should always use a good solidly rated secondary winding on this transformer. These may be a bit hard to find and so two similar transformers, such as the old 285 per side "Henderson" of 120 to 150 mills. rating each, may be paralleled to give enough current. (N.B.—385 volts is usually too much.)

THE RING MODULATOR-DETECTOR

This idea may be of use to those who wish to use 9 Mc. crystal filters in transistorised s.s.b. transceivers. It came to me via the N.Z.A.R.T. magazine, "Break-In," for Dec. 1966. ZL4IO described (p. 343) a diode ring modulator-detector with diode switching from receive to transmit. Fig. 1 gives a simplified diagram of the arrangement for the experimenters.

Switching the 12 volt negative supply to the appropriate audio amplifiers and diodes, changes over from receive to transmit.

The unit described was built using a McCoy silver sentinel filter, with all of the amplifiers in the block diagram on a small chassis about 7 inches by 4 inches.

73 for now, Phil VK5NN.

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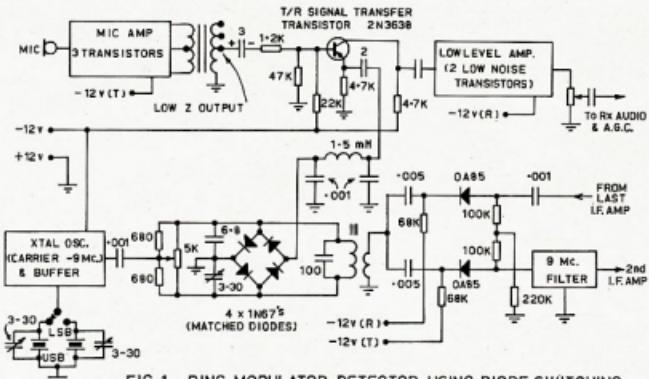


FIG 1 RING MODULATOR-DETECTOR USING DIODE SWITCHING

whether you are listed or not, drop him a line telling him your call, handle, equipment, antennae and any other relevant details of your operating habits.

Comps tells me there are now over 1,000 VK Amateurs using s.s.b. The transmitting gear at VK5EF is all s.s.b. now, even for 6 and 2 metres. There must be quite a number of Z-call sidebanders not listed by Comps—so I suggest the v.h.f. gang in each State should collate the statistics on known users of s.s.b. and send it along. In a few months time we may try to extract and publish figures of various State numbers and types of equipment in use.

I understand that a suitable number is being reserved for a well known VK5 Amateur when he finally goes sideband—as we all feel he must be with the efflux of time—if he is to have any contacts at all on the air.

Silicon diodes are a "must" for these supplies, as vacuum type rectifiers will not supply large capacitive filters for s.s.b. finals and still reach old age.

Please remember that the filament voltage on the final tubes must be well up if peak output from the transceiver is to be maintained. Keep it up to 12.6 to 13 volts at the socket so that it is never low when the line volts are down, e.g. at tea time on a cold night. The screen voltage on the final tubes should never be too high as tubes such as the 6DQ5 can become soft if abused too frequently. The screens should not be run with excessive voltage or current. The current drawn by the screens is determined by the loading of the final and this must be done in accordance with the instruction manual. When in doubt, heavy loading is better than light loading—as far as the tubes are concerned.

A 3-TRANSISTOR AUDIO COMPRESSOR*

CAPTAIN PAUL H. LEE, W3JHR

This simple compressor can be a boon to the s.s.b. operator since it will keep up the average level and talk power and prevent over-drive and splatter.

IN the days of a.m. overmodulation caused splatter due to negative modulation peak chopping. In the modern days of s.s.b. too much audio also causes splatter, but due to over-driving of the linear amplifier stages in an s.s.b. transmitter, and the consequent generation of non-linearity products. Some s.s.b. transmitters have automatic level control (a.l.c.), but this may not always be effective in preventing over-driving. Here at W3JHR I decided to use an audio compressor amplifier to prevent over-driving, not

aluminium box, which is in turn mounted on my audio control and phone patch panel in my station console. The batteries are contained in the box.

Another way of building the unit would be to mount the components on a printed circuit board, and to find room for it inside the s.s.b. exciter, and to power it from 9 volts d.c. stolen from the exciter's plate supply. It could then be permanently wired in to the exciter, or connected to a front panel switch which could be labelled "compressor in/out".

COMPONENTS

The components are of course small. Half-watt resistors are used, and the small 6 and 10 volt electrolytic capacitors are employed. An r.f. choke is in-

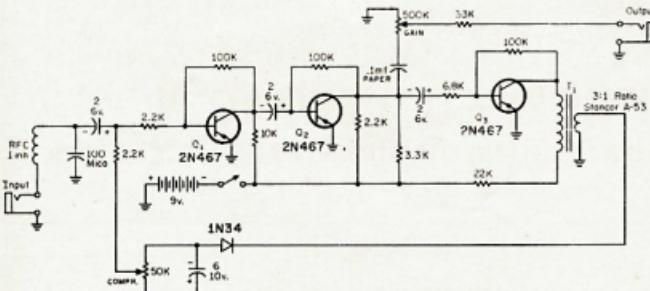


Fig. 1.—Circuit of the W3JHR Audio Compressor. The transistors are all 2N467 and the compression pot is a log taper.

only of the final amplifier but of all other stages in the transmitter as well. When I had the 1 kw. a.m. transmitter, I used a compressor¹ employing vacuum tubes. This was sold, however, and so I decided to build one using transistors.

CIRCUIT

The circuit of this simple unit is shown in Fig. 1. Three type 2N467 transistors are used. Two of them are the audio amplifier which drives the transmitter. The third is the audio amplifier which drives the 1N34 diode to produce the d.c. bias for gain control of the first stage. The unit is powered from a 9 volt battery. The type of battery commonly used in transistor radios can be used, but I prefer to use six $1\frac{1}{2}$ volt flashlight batteries in series, because they last longer.

CONSTRUCTION

The compressor can be built in many ways. It can be built into a beer can, for example, with an input jack on one end and the output jack on the other end. The microphone can be plugged into the input end, and a length of shielded cable can then be run from the output jack of the compressor to the input jack of the transmitter. I built my unit in a $6 \times 6 \times 6$ inch

* Reprinted from "CQ," July 1967.
1 Lee, P. H., LCDR, "More Modulation per Dollar," "CQ," August 1952, page 19.

Tinned Fuse Wire—Fusing Current and Time Values

Approx. Diam. (inches)	S.W.G.	Fusing Current (amp.)	Fusing Time (seconds)	Work Current (amp.)
0.114	9			
0.128	10			
0.116	11	405		
0.104	12	344		
0.092	13	286		
0.086	14	232	29	77
0.072	15			
0.064	16	166	23	55
0.056	17			
0.048	18	108	18	36
0.040	19			
0.036	20	70	14	23
0.032	21	58	12	19
0.028	22	48	11	16
0.024	23	40	10	13
0.022	24	33	8	11
0.020	25	28.5	8	9.5*
0.018	26	25.0	7	8.0
0.0164	27	22.2	7	7.4
0.0148	28	18.0	6	6.0
0.0136	29	16.8	5.5	5.6
0.0124	30	14.0	5	4.7*
0.0116	31	12.7	5	4.2
0.0108	32	11.5	5	3.8
0.0100	33	10.2	4.6	3.4
0.0092	34	9.0	4.5	3.0
0.0084	35	7.9	4.4	2.6
0.0076	36	6.8	4.2	2.3
0.0068	37	5.7	4.1	1.9
0.0060	38	4.8	3.7	1.6
0.0052	39	3.8	3.5	1.3
0.0048	40	3.4	3.4	1.1
0.0044	41	3.0	3.3	1.0
0.0040	42	2.6	3.2	0.9
0.0036	43	2.2	3.2	0.7
0.0032	44	1.9	3.2	0.6
0.0028	45	1.6	3.2	0.5
0.0024	46	1.3	3.2	0.4
0.0020	47	1.0	3.2	0.3
0.0016	48			
0.0012	49			
0.0010	50			

* 10 amp. fuse wire.

† 5 amp. fuse wire.

† 3 amp. fuse wire.

Notes:

- Time figures are based on tests made — being approximate time from application of F.C. to cold wires until fusing of same.
- Maximum Working Current equals Fusing Current $\div 3$** , based on tests made.
- Table figures apply to single tinned Cu wire in commercial fuse holders, open or tube type, where wires are not in close fitting to non-conductor of heat. For commercial holders where wire is closely surrounded by a non-conductor of heat, e.g. asbestos braid, multiply table figures by 0.75.
- For parallel strands twisted in single fuse holders of the open type, multiply the table figures by the following factors:

Strands:	1	2	3	4
Factor:	1.0	1.67	2.33	3.0
Strands:	5	6	7	8
Factor:	3.67	4.33	5.0	5.67
Strands:	9	10	11	12
Factor:	6.33	7.0	7.67	8.33

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AUSTRALIAN DX CENTURY CLUB AWARD

OBJECTS

- This Award was created in order to stimulate interest in working DX in Australia and to give successful applicants some tangible recognition of their achievements.
- This Award, to be known as the "DX Century Club" Award, will be issued to any Australian Amateur who satisfies the following conditions.
- A certificate of the Award will be issued to the applicants who show proof of having contacts in one hundred countries, and will be endorsed as necessary, for contacts made using only one type of emission.

REQUIREMENTS

- Verifications are required from one hundred different countries as shown in the Official Countries List.
- The Official Countries List will be published annually in "Amateur Radio" and will be amended from time to time as required. Should a country be deleted from the Countries List at any time, members and applicants will be credited with such country if the date of contact was before such deletion.
- The commencing date for the Award is 1st January 1948. All contacts made on or after this date may be included.

OPERATION

- Contacts must be made in the H.F. Band (Band 7) which extends from 3 to 30 Mc., but such contacts must only be made in the authorised Amateur Bands in Band 7.

3.2 All contacts must be two-way contacts on the same band. Cross band contacts will not be allowed.

3.3 Contacts may be made using any authorised type of emission for the band concerned.

3.4 Credit may only be claimed for contacts with stations using regularly-assigned Government call signs for the country concerned.

3.5 Contacts made with ship or aircraft stations will not be allowed, but land-mobile stations may be claimed provided their specific location at the time of contact is clearly shown on the verification.

3.6 All stations must be claimed from the same call area by the applicant, although the call sign is subsequently changed, contacts will be allowed under the new call sign providing the applicant is still in the same call area.

3.7 All contacts must be made when operating in accordance with the Regulations laid down in the "Handbook for the Guidance of Operators of Amateur Wireless Stations" or its successor.

VERIFICATIONS

- It will be necessary for the applicant to produce verifications in the form of QSL cards or other written evidence showing that two-way contacts have taken place.
- Each verification submitted must be exactly as received from the station contacted, and altered or forged verifications will be grounds for disqualification of the applicant.

4.3 Each verification submitted must show the date and time of contact, type of emission and frequency band used, the report and the location or address of the station at the time of contact.

4.4 A check list must accompany every application setting out the details for each claimed station in accordance with the details required in Rule 4.3.

APPLICATIONS

4.5 Applications for membership shall be addressed to the Federal Awards Manager, Box 2611W, G.P.O., Melbourne, Vic. 3001, accompanied by the verification and check list with sufficient postage enclosed for their return to the applicant, registration being included if desired.

5.2 A nominal charge of 25c, which shall also be forwarded with the application, will be made for the issue of the certificate to successful applicants who are non-members of the Wireless Institute of Australia.

5.3 Successful applicants will be listed periodically in "Amateur Radio". Members of the D.X.C.C. wishing to have their verified country totals, over and above the one hundred necessary for membership, listed will be given these totals to the Federal Awards Manager.

5.4 In all cases of dispute, the decision of the Federal Awards Manager and two officers of the Federal Executive of the W.I.A. in the interpretation and application of these Rules shall be final and binding.

5.5 Notwithstanding anything to the contrary in these Rules, the Federal Council of the W.I.A. reserves the right to amend them when necessary.

AUSTRALIAN V.H.F. CENTURY CLUB AWARD

OBJECTS

- This Award has been created in order to stimulate interest in the V.H.F. bands in Australia, and to give successful applicants some tangible recognition of their achievements.
- This Award, to be known as the "V.H.F. Century Club" Award, will be issued to any Australian Amateur who satisfies the following conditions.
- Certificates of the Award will be issued to the applicants who show proof of having made one hundred contacts on the V.H.F. bands, and will be endorsed as necessary, for contacts made using only one type of emission.

OPERATION

- Contacts must be made in the V.H.F. Band (Band 8) which extends from 30 to 300 Mc., but such contacts must only be made in the authorised Amateur Bands in Band 8.

2.2 In the case of the authorised bands between 30 and 100 Mc., verifications are required from one hundred different stations at least seventy of which must be Australian. The Amateur Bands 80 to 94 Mc. and 56 to 60 Mc. will be counted as one band for the purposes of the Award.

2.3 In the case of the authorised Band between 100 to 200 Mc. and any authorised band between 200 to 300 Mc., verifications from one hundred different stations for each band is required.

2.4 It is possible under these rules for one applicant to receive three certificates, one for each of the authorised Amateur Bands nominated in Rules 2.2 and 2.3.

2.5 The commencing date for the Award is 1st June 1948. All contacts made on or after this date may be included.

OPERATION

3.1 All contacts must be two-way contacts on the same band, and cross band contacts will not be allowed.

3.2 Contacts may be made using any authorised type of emission for the band concerned.

3.3 Fixed stations may contact portable/mobile stations and vice versa, but portable/mobile station applicants must make their contacts from within the same call area.

3.4 Applicants, when operating either portable/mobile or fixed, may contact the same station licensee, but may not include both contacts for the same type of endorsement.

3.5 Applicants may only count one contact for a station worked as a limited licensee with a Z call sign, and is subsequently contacted as a full A.O.C.P. holder.

3.6 All stations must be contacted from the same call area by the applicant, although if the applicant's call sign is subsequently changed, contacts will be allowed under the new call sign providing the applicant is still in the same call area.

3.7 All contacts must be made when operating in accordance with the Regulations laid down in the "Handbook for the Guidance of Operators of Amateur Wireless Stations" or its successor.

VERIFICATIONS

4.1 It will be necessary for the applicant to produce verifications in the form of QSL cards or other written evidence showing that two-way contacts have taken place.

4.2 Each verification submitted must be exactly as received from the station contacted, and altered or forged verifications will be grounds for disqualification of the applicant.

4.3 Each verification submitted must show the date and time of contact, type of emission and frequency band used, the report and the location or address of the station at the time of contact.

4.4 A check list must accompany every application setting out the following details—

4.4.1 Applicant's name and call sign, and whether a member of the W.I.A. or not.

4.4.2 Band for which application is made, and whether special endorsement is involved.

4.4.3 Where applicable, the date of change of call sign and previous call sign.

4.4.4 Details of each contact as required by Rule 4.3.

4.4.5 The applicant's location at the time of each contact if portable/mobile operation is involved.

4.4.6 Any relevant details of any contact about which some doubt might exist.

APPLICATIONS

5.1 Applications for membership shall be addressed to the Federal Awards Manager, Box 2611W, G.P.O., Melbourne, Vic. 3001, accompanied by the verifications and the check list with sufficient postage enclosed for their return to the applicant, registration being included if desired.

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5.5 Notwithstanding anything to the contrary in these Rules, the Federal Council of the W.I.A. reserves the right to amend them when necessary.

AUSTRALIAN D.X.C.C. COUNTRIES LIST

	Phone	C.W.	Phone	C.W.
AC3	Sikkim		FR7	Tromelin Is.
AC4	Tibet		FS7	Saint Martin
AC5	Bhutan		FU8, YJ1, 8	New Hebrides
AP	East Pakistan		FW8	Wallis & Futuna Is.
AP	West Pakistan		FY7	Fr. Guiana & Inini
BV (C3)	Formosa		G	England
BY (C)	China		GC	Guernsey and Deps.
CE	Chile		GC	Jersey I.
CE9, KC4, LU-Z, VK0, VP8, ZL5	etc., Antarctica		GD	Isle of Man
CE0A	Easter I.		GI	Northern Ireland
CE0X	St. Felix I.		GM	Scotland
CE0Z	J. Fernandez Arch.		GW	Wales
CM, CO	Cuba		HA	Hungary
CN2, 8, 9	Morocco		HB	Switzerland
CP	Bolivia		HB0 (HE)	Liechtenstein
CR3	Portuguese Guinea		HC	Ecuador
CR4	Cape Verde Is.		HC8G	Galapagos Is.
CR5	Principe, Sao Thome		HH	Haiti
CR6	Angola		HI	Dominican Rep.
CR7	Mozambique		HK, 5J	Colombia
CR8, 10	Port. Timor		HK0	Arch. of San Andres and Providencia
CR9	Macao		HK0	Bajo Nuevo
CT1	Portugal		HK0	Malpelo Is.
CT2	Azores		HL, HM	Korea
CT3	Madeira Is.		HP	Panama
CX	Uruguay		HR	Honduras
DJ, DL, DM	Germany		HS	Thailand
DU	Philippine Is.		HV	Vatican
EA	Spain		II, IT1	Italy
EA6	Baleairic Is.		IS1	Sardinia
EA8	Canary Is.		JA, KA	Japan
EA9	Ifni		JT1	Mongolia
EA9	Rio de Oro		JY	Jordan
EA9	Spanish Morocco		K, W	U.S.A.
EA0	Spanish Guinea		KA0, KG61	Bonin & Volcano Is.
EI	Rep. of Ireland		KB6	Baker, Howland and Am. Phoenix I. (inc. Canton I.)
EL	Liberia		KC4	Navassa I.
EP, EQ	Iran		KC6	Eastern Caroline Is.
ET2, 3, 9E	Ethiopia		KC6	Western Caroline Is.
F	France		KG4	Guantanamo Bay
FB8	A'dam & St. Paul Is.		KG6	Guam
FB8	Crozet Is.		KG6	Marcus I.
FB8	Kerguelen Is.		(Rota, Tinian, Saipan, etc.)	Mariana Is.
FC	Corsica		KH6	Hawaiian Is.
FG7	Guadeloupe		KH6	Kure I.
FH8	Comoro Is.		KJ6	Johnston I.
FK8	New Caledonia		KL7	Alaska
FL8	Fr. Somaliland		KM6	Midway Is.
FM7	Martinique		KP4	Puerto Rico
FO8	Clipperton I.		KP6	Palmyra Group, Jarvis I.
FO8	Fr. Oceania		KR6	Ryukyu Is.
FO8	Mari Theresa Is.		KS4B	Ser'na Bank & Roncad Cay
FP8	St. Pierre & Miqu. Is.		KS4	Swan Is.
FR7 (from 25/6/60)	Glorioso I.		KS6	American Samoa
FR7 (from 25/6/60)	Juan de Nova and Europa Is.		KV4	Virgin Is.
FR7	Reunion I.			

		Phone	C.W.
KW6		Wake I.	
KX6		Marshall Is.	
KZ5		Canal Zone	
LA		Bouvet I.	
LA, JX		Jan Mayen	
LA		Norway	
LA, JW		Svalbard	
LU		Argentina	
LX		Luxembourg	
LZ		Bulgaria	
MP4B		Bahrein	
MP4Q		Qatar	
MP4D, T		Trucial Oman	
OA		Peru	
OD5		Lebanon	
OE		Austria	
OH		Finland	
OH0		Aland Is.	
OK		Czechoslovakia	
ON4		Belgium	
OX, KG1, XP		Greenland	
OY		Faeroes	
OZ		Denmark	
PA0, PII		Netherlands	
PJ		Neth. West Indies	
PJ2M		Sint Maarten	
PX		Andorra	
PY		Brazil	
PY0		Fernando de Noronha	
PY0		St. Peter & Paul Rocks	
PY0		Trindade & Martin Vaz Is.	
PZ1		Netherlands Guiana	
SL, SM		Sweden	
SP		Poland	
ST2		Sudan	
SU		Egypt	
SV		Crete	
SV		Dodecanese	
SV		Greece	
TA		Turkey	
TF		Iceland	
TG		Guatemala	
TI		Costa Rica	
TI9		Cocos I.	
TJ (FE8)		Cameroon Rep.	
TL8 (from 13/8/60)	Cen. Afric. R.		
TN8 (from 15/8/60)	Congo Rep.		
TR8 (from 17/8/60)	Gabon Rep.		
TS (3V8)		Tunisia	
TT8 (from 11/8/60)	Chad Rep.		
TU2 (fr. 7/8/60)	Ivory Coast Rep.		
TY2 (fr. 1/8/60)	Dahomey Rep.		
TZ2 (from 20/8/60)	Mali Rep.		
UA, UV, UW1-6, UN1		Eur. R.S.F.S.R.	
UA1		Franz Josef Land	
UA2		Kaliningrad Region	
UA, UW9, 0		Asiatic R.S.F.S.R.	
UB5, UT5, UY5		Ukraine	
UC2		White Russian S.S.R.	
UD6		Azerbaijan	
UF6		Georgia	

		Phone	C.W.
UG6		Armenia	
UH8		Turkoman	
UI8		Uzbek	
UJ8		Tadzhik	
UL7		Kazakh	
UM8		Kirghiz	
UO5		Moldavia	
UP2		Lithuania	
UQ2		Latvia	
UR2		Estonia	
VE, VO		Canada	
VK		Australia	
VK2		Lord Howe Is.	
VK4		Willis Is.	
VK9		Christmas I.	
VK9, ZC3		Cocos Is.	
VK9		Nauru I.	
VK9		Norfolk I.	
VK9		Papua Terr.	
VK9		Terr. of New Guinea	
VK0		Heard I.	
VK0		Macquarie I.	
VP1		British Honduras	
VP2		Anguilla	
VP2		Antigua, Barbuda	
VP2		Br. Virgin Is.	
VP2		Dominica	
VP2		Grenada & Deps.	
VP2		Montserrat	
VP2		St. Kitts, Nevis	
VP2		St. Lucia	
VP2		St. Vincent & Deps.	
VP3 (see 8R)			
VP5		Turks & Caicos Is.	
VP6		Barbados	
VP7		Bahama Is.	
VP8		Falkland Is.	
VP8, LU-Z		South Georgia	
VP8, LU-Z		South Orkney Is.	
VP8, LU-Z		South Sandwich Is.	
VP8, LU-Z, CE9		Sth. Shet. Is.	
VP9		Bermuda Is.	
VQ8		Agalega & St. Brandon	
VQ8		Chagos Is.	
VQ8		Mauritius	
VQ8		Rodriguez I.	
VQ9		Albarda Is.	
VQ9D (from 10/11/65)		Desroches	
VQ9F (fr. 10/11/65)		Farquhar Is.	
VQ9		Seychelles	
VR1 (includ. Canton Is.)		British Phoenix Is.	
VR1	Gilbert & Ellice Is., Ocean Is.		
VR2		Fiji Is.	
VR3		Fanning & Christmas Is.	
VR4		Solomon Is.	
VR5		Tonga Is.	
VR6		Pitcairn I.	
VS5		Brunei	
VS6		Hong Kong	

	Phone	C.W.		Phone	C.W.
VS9A, P, S	Aden and Socotra		5T5 (from 20/6/60)	Mauritania	
VS9H	Kuria Muria		5U7 (from 3/8/60)	Niger Rep.	
VS9K	Kamaran Is.		5V (F.D.)	Togo/lese Rep.	
VS9M	Maldivie Is.		5W1 (ZM6)	Samoa	
VS9O, MP4M	Sultanate of Oman		5X5 (VQ3)	Uganda	
VU2	India		5Z4 (VQ4)	Kenya	
VU.	Laccadive Is.		6O1, 6O2 (fm. 1/7/60)	Somalia R.	
VU	Andaman & Nicobar Is.		6W8 (from 20/6/60)	Senegal Rep.	
XE, XF	Mexico		6Y (VP5)	Jamaica	
XF4	Revilla Gigedo		7G1 (from 1/10/58)	Rp. of Guinea	
XT2 (from 5/8/60)	Voltiye Rep.		7Q7 (ZD6, Nyasaland)	Malawi	
XU	Cambodia		7X (FA)	Algeria	
XW8	Laos		7Z (HZ)	Saudi Arabia	
XZ2	Burma		8F (from 1/5/63)	Indonesia	
YA	Afghanistan		8R (VP3 Br. Guiana)	Guyana	
YI	Iraq		8Z4	Saudi Arabia-Iraq N.Z.	
YK	Syria		8Z5 (9K3)	Saudi Ar.-Kuwait N.Z.	
YN, YN0	Nicaragua		9A (MI)	San Marino	
YO	Roumania		9G1 (from 5/3/57)	Ghana	
YS	Salvador		9H1 (ZB1)	Malta	
YU	Yugoslavia		9J (VQ2, N. Rhod.)	Zambia	
YV	Venezuela		9K2	Kuwait	
YV0	Aves I.		9L1 (ZD1)	Sierra Leone	
ZA	Albania		9M2 (from 16/9/63)	W. Malaysia	
ZB2	Gibraltar		9M6, 9M8 (from 16/9/63)	East Malaysia	
ZC6	Palestine		9N1	Nepal	
ZD3	The Gambia		9Q5 (pr. OQ5-6) R. of The Congo		
ZD5 (ZS7)	Swaziland		9U5 (from 1/7/62)	Burundi	
ZD7	St. Helena		9V1 (9M4, VS1)	Singapore	
ZD8	Ascension Is.		9X5 (from 1/7/62)	Rwanda Rep.	
ZD9 T. da Cunha and Gough Is.			9Y4 (VP4)	Trinidad and Tobago	
ZE	Southern Rhodesia				
ZF (VP5)	Cayman Is.				
ZK1	Cook Is.				
ZK1	Manihiki Is.				
ZK2	Niue				
ZL	Chatham Is.				
ZL	New Zealand				
ZL1	Kermadec Is.				
ZL4	Auckland and Campbell Is.				
ZM7	Tokelaus				
ZP	Paraguay				
ZS1, 2, 4, 5, 6	Rep. of S. Africa				
ZS2	Prince Ed. and Marion I.				
ZS3	South-West Africa				
ZS8 (Basutoland)	Lesotho				
ZS9 (Bechuanal'd)	Botswana Rep.				
1M	Minerva Reef				
1S	Spratly Is.				
3A	Monaco				
3C (see VE)					
3W8, XV5	Vietnam				
3Y (see LA)					
4S7 (VS7)	Ceylon				
4U1	I.T.U. Geneva				
4W1	Yemen				
4X4, 4Z (from 14/5/48)	Israel				
5A	Libya				
5B4 (ZC4)	Cyprus				
5H1 (VQ1)	Zanzibar				
5H3 (VQ3)	Tanganyika				
5N2 (ZD2)	Nigeria				
5R8 (FB8)	Madagascar	Malagasy			

† From 16/9/63 to 8/8/65 counts as West Malaysia.

"DELETED" COUNTRIES LIST

C9 (prior 1/1/64)	Manchuria	
CN2 (prior 1/7/60)	Tangier	
CR8 (prior 1/1/62)	Goa	
ET2 (prior 14/11/62)	Eritrea	
FF8	French West Africa	
FI8 (pr'r 20/7/55)	Fr. Indo China	
FN (prior 1/11/54)	French India	
FQ8	Fr. Equatorial Africa	
11 (prior 1/4/57)	Trieste	
15 (prior 1/7/60)	It. Somaliland	
JZ0 (pr'r 1/5/63)	W. New Guinea	
PK1, 2, 3 (prior 1/5/63)	Java	
PK4 (prior 1/5/63)	Sumatra	
PK5 (prior 1/5/63)	Borneo	
PK6 (prior 1/5/63)	Celebes and Molucca Is.	
UN1 (prior 1/7/60)	Kar-Fin Rep.	
VO (prior 1/4/49)	Newt/Lab.	
VQ6 (prior 1/7/60)	Br. Somalil'd	
VS4 (prior 16/9/63)	Sarawak	
ZC5 (pr. 16/9/63)	Br. Nth. Borneo	
ZD4 (pr. 5/3/57)	Gold Coast, Togo.	
9M2, VS2 (prior 16/9/63)	Malaya	
9S4 (prior 1/4/57)	Saar	
9U5 (from 1/7/60 to 30/6/62)	Ruanda-Urundi	

NEW CALL SIGNS

SEPTEMBER 1957

VK1ZAF—W. B. R. Brooks, P.O.C.E.C., Cottage 64, H.M.A.S. Harman, Canberra, 2600.
 VK1ZGX—P. G. M. Bruer, 8 Merritt Pl., 0'Conor, 2601.
 VK2BGM—G. J. Post, 32 Rutherford St., Blacktown, 2148.
 VK2BHC—La Hernandez De La Costa Radio Club (Sect.), 53 Wyong Rd., Mosman, 2088.
 VK2BLY—L. T. Young, 2 Iredale Ave., Cremorne, 2090.
 VK2BTM—A. M. La Macchia, 26 Derby Rd., Hornsby, 2077.
 VK2ZNV—M. F. Veevers, 46 Haig St., Wentworthville, 2145.
 VK2ZSL—R. L. Close, 37 Bombara St., Dudley, 2200.
 VK3AQE—P. J. Woodway, Goulburn Valley Hwy, South Shepparton, 3639.
 VK3ZUQ—R. K. Smart, 19 Hyslop Pde., East Malvern, 3144.
 VK3ZWG—S. R. Gregory, 30 Grandview Rd., Brighton North, 3186.
 VK3ZDD—D. K. Morgan, 13 Bowden St., Wenvoe, 3385.
 VK3ZZE—J. J. Collinrake, 49 Mayfield Ave., Malvern, 3144.
 VK4KHP—T. T. Hopgood, 47 Maxwell St., New Farm, 4005.
 VK4KXH—S. R. Roden, 3 Woodford St., Holland Park, 4160.
 VK4LJ—J. A. Bowen, 4 Catrins St., Rockhampton, 4700.
 VK4KR—E. W. Davis, 38 Miva St., Cooroy, 4557.
 VK4PM—J. G. Porter, Station: Nelly Bay, Magnetic Island, via Townsville, 4810; Postal: C/o, Nelly Bay P.O., Magnetic Island, via Townsville, 4810.
 VK4RK—E. R. Harvey, 3 Paradise Pl., Surfers Paradise, 4215.
 VK4ZBA—A. H. Barnes, 61 Meemar St., Cheraside, 4032.
 VK4ZDW—D. W. Rickard, 47 Market St., Toowong, 4068.
 VK4ZGK—D. J. Shield, 14 Cameron St., Fairfield, 4103.

VK4ZKT—K. H. Tietze, 9 Normal Pde., Eagle Junction, 2111.
 VK4ZLY—L. R. Yarrow, 16 Makepeace St., Rosewood, 4340.
 VK4ZSM—J. J. Madson, 30 Pope St., Tarragindi, 4121.
 VK5FI—A. E. Gunning, Station: Portable in South Australia; Postal: C/o, Superintendent, Radio Branch, P.M.G. Dept., 31 Franklin St., Adelaide, 5000.
 VK5MP—N. R. Porter, John Dallwitz Ave., Angusford, 5353.
 VK5XV—A. J. Van der Hart, 31 Dudley Cres., Marine, 5049.
 VK5YN—A. V. Newman, 78 McKenzie Rd., Elizabeth Downs, 5113.
 VK5ZIF—I. D. Foster, 40 Addison Rd., Hove, 5000.
 VK6AI—P. C. Cole, 42 McGillivray Ave., Morley Park, 6062.
 VK6LJ—L. J. Smith, Lot 55, McGillivray Ave., Morley Park, 6062.

VK7MD—D. R. Marsland, 16 Nimir St., Howrah, 7018.
 VK7ZNN—N. Stutterd, 69 View Rd., Burnie, 7320.
 VK8ZEB—E. S. Blackburn, 823 Dudley St., Rapid Creek, 5792.
 VK9ZDW—D. McC. Weston, Station: D.C.A. Single Men's Quarters, Konedobu, Port Moresby; Postal: C/o, D.C.A. P.O. Box 89, Port Moresby, Papua.
 VK3ZGW—W. W. Van Galen, Station: No. 67, 5th St. Lee, T.P.N.G.; Postal: C/o, D.C.A. Box 102, Lee, T.P.N.G.

CANCELLATIONS

VK2XX—C. H. Howard—Not renewed.
 VK2YS—N. B. Littlejohn—Not renewed.
 VK2ZG—H. Cullerton—Deceased.
 VK2ZM—L. E. Garrow—Now VK1AM.
 VK2AMG—L. M. Burton—Transferred Interstate.
 VK2AXF—A. Stewart—Not renewed.
 VK2BMP—M. N. Featherstone—Not renewed.
 VK2BZM—A. M. B. Mason—Now VK3BTL.
 VK2ZJ—B. J. Mason—Not renewed.
 VK2ZGP—G. I. Post—Now VK1BGP.
 VK2ZJB—S. J. Brown—Not renewed.
 VK2ZRL—R. F. Lester—Transferred Interstate.
 VK2ZV—R. W. Satchell—Not renewed.
 VK3AON—T. A. J. Henry—Not renewed.

VK3AZK—J. L. Thomason, Transferred Interstate.
 VK47W—C. I. Ferris—Not renewed.
 VK4VW—V. J. Wilson—Ceased operation.
 VK4ZCF—L. H. Eaton—Ceased operation.
 VK4ZEE—P. J. Fitzherbert—Transferred Victoria.
 VK4ZKJ—E. W. Davis—Now VK4KVR.
 VK3AS—P. G. Electrical Industries Pty. Ltd.—Ceased operation.
 VK5OE—E. D. Sider—Not renewed.
 VK5ZL—N. R. Porter—Now VK5KMP.
 VK5ZXR—G. A. Van der Hart—Now VK5XV.
 VK5MJ—A. C. MacPherson—Left country.
 VK5ZEX—B. C. Campbell—Not renewed.
 VK7ZMD—D. R. Marsland—Now VK7MD.

BACK NUMBERS OF "AMATEUR RADIO"

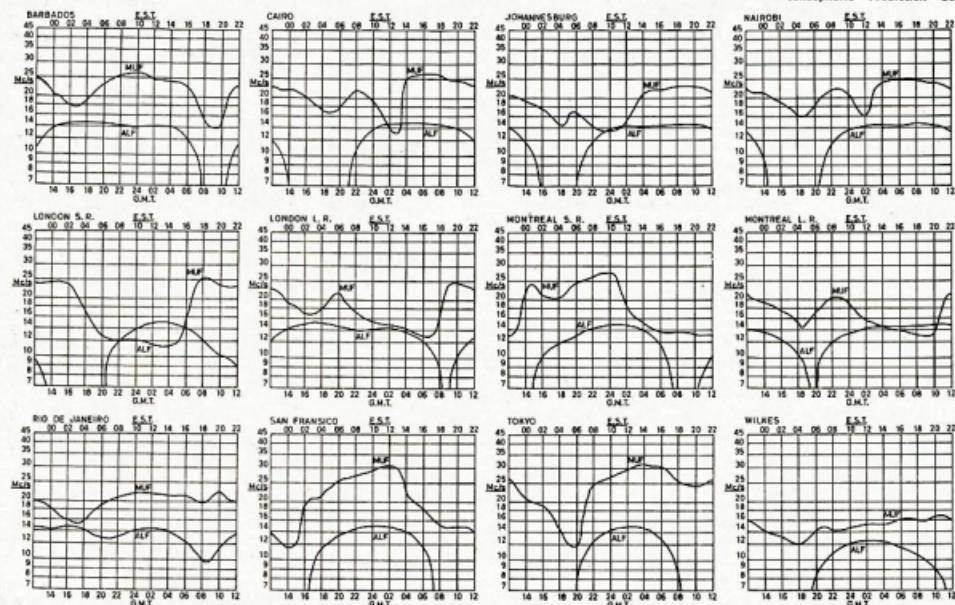
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 1956: February, April, May, June, October, December.
 1957: February, October, November.
 1958: April, May, November, December.
 1959: March, May, June, August, September, October, December.
 1960: March, April, June, July, October.
 1961: April, May, June, July, August, September, October, November, December.
 1962: February, March, April, May, June, October, November, December.
 1963: June, July, August, September, October, November, December.
 1964: All months except July.
 1965: All months.
 1966: All months except October and December.
 1967: February, March, April, May, June, October, November, December.

PREDICTION CHARTS FOR JANUARY 1968

(Prediction Charts by courtesy of
Ionospheric Prediction Service)



Rules for the Australian S.W.L. Century Club Award

OBJECTS

1.1 This award was created in order to stimulate interest in logging DX in Australia, and to give successful applicants some tangible recognition of their achievement.

1.2 This award, to be known as the "S.W.L. Century Club Award," will be issued to any resident Australian Short Wave Listener who satisfies the conditions following:

1.3 A certificate of the award will be issued to any applicant who provides proof of having logged one hundred countries and will be endorsed, as necessary, for loggings made in respect of one type of emission.

REQUIREMENTS

2.1 Verifications are required from one hundred different countries as shown in the official "Australian DXCC Countries List".

2.2 The official countries list will be published annually in "Amateur Radio" and will be amended from time to time as required.

2.3 Stations may be deleted from the list at any time, members and intending members will be credited with such country if the date of logging was before such deletion.

2.4 The commencing date for the award is 1st January 1962. All loggings made on or after that date may be included.

OPERATION

3.1 Loggings must be made in the h.f. band (Band 7) which extends from 3 to 30 Mc., but each logging must only be made of stations operating in the authorised Amateur Bands in Band 7.

3.2 Loggings may be made of any authorised type of emission for the band concerned.

3.3 Credit may only be claimed for the logging of stations using regularly-assigned government call signs for the country concerned.

3.4 Loggings of ship or aircraft stations will not be allowed, but land-based stations may be claimed, provided their specific location at the time of logging is clearly shown on the verification.

3.5 All stations must be logged from the same call area by the applicant.

VERIFICATIONS

4.1 It will be necessary for the applicant to produce verifications in the form of QSL cards,

or other written evidence showing that specific loggings have been made.

4.2 Each verification submitted must be exactly as received from the station whose signals were logged and altered or forged verifications will lead to the rejection of that card, and may lead to the disqualification of the applicant.

4.3 Each verification submitted must show the call sign, the date, and the time of contact, type of emission and frequency band used, and the location or address of the station at the time of logging.

4.4 Each card must accompany every application setting out the following details:

4.4.1 Applicant's name and listener number, if any, and whether a member of the W.L.A. or not;

4.4.2 Name and number of any special endorsement involved;

4.4.3 Details of each contact as required by Rule 4.3;

4.4.4 The applicant's location at the time of logging, including if portable/mobile operation is involved;

4.4.5 Any relevant details of any contact about which some doubt may exist.

APPLICATIONS

5.1 Applications for membership shall be addressed to the "S.W.L. Awards" Manager, G.P.O. Box 2611W, Melbourne, Victoria, 3001, accompanied by the verifications, check list and sufficient postage for the return of the verifications, registration being included if desired.

5.2 A nominal charge of 25c, which shall also be forwarded with the application, will be made for the issue of the certificate to members of the W.L.A. who are members of the Wireless Institute of Australia at the time of application.

5.3 Successful applicants will be listed periodically in "Amateur Radio" and, if desired, the decision of the S.W.L. Awards Manager and two officers of the Federal Executive of the W.L.A. in the interpretation and application of these rules shall be final and binding.

5.4 Notwithstanding to the contrary in these rules, the Federal Council of the W.L.A. reserves the right to amend these when necessary.

2 METRE S.S.B. TRANSMITTER

(Continued from Page 3)

registering on the g.d.o., I tracked back through and found it.

All the sockets were the ceramic type with shields; shielding was finally incorporated in the final 3/12 when it was decided to run it as a 10 watt mobile.

Zener diodes replaced the cathode resistors, clamping the bias at -20 volts, which, along with the 150V. screen regulation, gave quite a copyable signal on 144 Mc.

A test over 10 miles from beam to vertical dipole gave quite good results. The speech quality was fairly harsh but this was cured by a few capacitors in the audio pre-amplifier.

VK3ZJB taped several overs and played them back. The overall results were very satisfactory and the hours spent building the rig were justified.

This rig draws approximately 200 mA. and mobile operating comes easy due to the crystal control.

If a v.f.o. is to be used, it would be a simple matter to build up a stable v.f.o. with an output at 112 Mc. This can be fed to the grid of the quadrupler or another way would be to use the 6E7 as a frequency multiplier to 111 Mc. from a lower frequency v.f.o.

W.I.A. D.X.C.C. (S.W.L.)

Listed below are details relating to those Australian Short Wave Listeners to whom this certificate has been awarded:—

Cert.	Call	Name	Date
1.	13042	Eric Trebilcock	1/1/65
2.	12022	Don Granity	29/12/65
3.	13211	Warwick Smith	31/3/66
4.	14018	Chas. Thorpe	11/7/66
5.	12040	Bob Halligan	22/7/67
6.	13229	Bob Halligan	18/11/67

TECHNICAL ARTICLES

Readers are requested to submit articles for publication in "A.R." in particular constructional articles, photographs of stations and gear, together with articles suitable for beginners, are required.

Manuscripts should preferably be typewritten but if handwritten please double space the writing. Drawings will be done by "A.R." staff.

Photographs will be returned if the sender's name and address is shown on the back of each photograph submitted.

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THE NEW HANDBOOK

Further to the notes that appeared in the October and November issues of "A.R." some additional points of interest from the new Handbook follow—

AGE LIMIT

Licences for stations in the Amateur Service can now be obtained at the age of 15. The intending Amateur may, however, sit for the examination from the age of 14. If successful, he will receive his certificate of proficiency, but must wait until he is 15 before an amateur operator's licence will be issued. Extracts from the Handbook state—

Paragraph 3—Licences for radio stations in the amateur service may be granted subject to such conditions as are prescribed—1. The person who has attained the age of 15 years . . ."

Paragraph 9—An application for examination will not be accepted from a person who has not attained the age of 14 years."

EXAMINATIONS

Several changes have been made in the Handbook in respect to examinations—

(a) The frequency of the written part of the examination for A.O.C.P. or A.O.L.C.P. has been reduced and are now held twice yearly. The Morse test will, however, continue to be held four times a year.

Paragraph 6 states—"Examinations for amateur operator's certificates and amateur operator's limited certificates are conducted in selected centres in capital cities and at cities and towns at which a District Radio Inspector is stationed, on the third Tuesday of February and August. Examinations in telegraphy only are also held at these centres on the third Tuesday of May and November."

(b) Partial Failures in Examinations.—Whilst basically there has been no change in the previous situation where a year's exemption was allowed before re-examination, the change in frequency of examination has necessitated the re-phrasing of the relevant Handbook paragraph which now states—

"**Paragraph 20**—Exemption from re-examination in each subject in which a candidate was successful, and granted, in the case of theory and regulations for the ensuing two full examinations (February and August), and for telegraphy for the ensuing four examinations (February, May, August, and November)."

(c) Marking of C.W. Examinations.—The new Handbook clarifies the situation with regard to the marking of c.w. examinations. In the old Handbook it was simply stated that a pass mark of 70% was required and in many cases the intending amateur had prepared

himself for 70% "correctness of text", i.e. if he could copy 70 words out of the 100 he felt qualified to sit for the telegraphy examination. In fact the standard required was, and is, much higher and in the same terms was, and is, about 97% "correctness of text". As a result, the candidate often failed when he felt certain he had passed.

Paragraph 19 states—"In the telegraphy receiving test the candidate is required to receive 70 words (averaging 5 letters per word) in mixed plain language and figures (each figure counting as 2 letters) in 5 minutes. Each figure or letter incorrectly received counts as one error (a loss of 3 marks) with a maximum of 3 errors (a loss of 9 marks) in any one word or group. Additionally, one mark may be deducted for each doubtful character. More than 10 errors (30 marks) or its equivalent will result in failure."

In the telegraphy sending test the candidate is required to send the equivalent of 34 words (averaging 5 letters per word) in mixed and plain language and figures (a figure counting as 2 letters) in 2½ minutes. Each uncorrected letter or figure error involves a loss of 3 marks with a maximum of 3 such errors (a loss of 9 marks) in any one word or group. Additionally, one mark may be deducted for each corrected error, bad formation (each character) and spacing. More than 5 uncorrected errors or its equivalent or failure to complete the sending test in the allotted time will result in failure.

(d) Suggested Text Books—For the theory part of the examination the list of recommended text books has been brought up to date and **paragraph 16** lists the following:—

Radio Amateur Handbook (A.R.R.L.).

Radio Handbook (Editors and Engineers).

The Amateur Radio Handbook (R.S.G.B.).

The examination and regulations, **paragraph 17**, makes it quite clear that the candidate will be examined on chapters 1 to 8 of the new Handbook. He will not be expected to be able to quote the Wireless Telegraphy Regulations appended to the "new" Handbook.

T.V.I.

In all of the discussions with the Department this subject was the one least able to be precisely defined. The following statement of the situation appears in **paragraph 69**. Neither the Institute nor the Department are completely satisfied with the statement but could find no better way of expressing their intention.

Paragraph 69—Where the reception of broadcasting or television programmes is being affected by the operation of an amateur station, the licensee shall, except for brief

tests necessary to determine corrective measures, refrain from further transmission on the frequency or frequencies that cause the interference during the operating hours of the broadcasting or television stations affected. If such corrective action is successful in eliminating the interference the station may resume normal operation. However, if the combined efforts of the complainant and the licensee fail to clear the interference or the former refuses to co-operate with the licensee in the matter the Superintendent, Radio Branch, or District Radio Inspector should be notified accordingly. Each such case shall be investigated on its merits and the licensee shall be advised if and when he may resume transmissions or of the conditions under which his station may be operated."

The amateur cannot expect the right to transmit to the detriment of many television viewers or broadcast listeners. In the last resort he must accept that whether or not he is permitted to transmit whilst causing interference is a value judgment as to what is reasonable in all the circumstances of a particular case. Television or broadcast interference is not a problem that can be solved by the application of an arbitrary rule (except perhaps to the detriment of the amateur).

The fact is that the Department must have the discretion to judge what is reasonable. The fact of the matter, also, is that in every case where the problem has arisen in recent times, to the knowledge of the Institute, the Executive have found no cause to complain with the attitude adopted by the Department towards the amateur.

T.V.I. is not a problem that can be solved by regulations. In most cases it is a problem of human relations; in most cases t.v.i. can be cured before it is a problem. Much depends on the individual amateur himself.

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VHF

Sub-Editor: CYRIL MAUDE, VK3ZCK
2 Clarendon St., Avondale Heights, Vic., 3084

Not much interstate news has been received this month, possibly caused by the fire in the Mail Exchange back in November. The reports received show that 6 metres is becoming rather interesting as far as the DX is concerned, with openings to JA beginning to be a common occurrence worldwide across town. By the time you read this, the Ross Bull Memorial V.H.F. Contest will be in full swing and if band conditions are to form, some good scores should be made.

All those who have heard the VK0CR beacon over the last month, would you please send all details possible to Noel VK3ZPQ or myself as soon as possible.

Well cheers and 73, and a prosperous New Year, DX and otherwise. Cyril VK3ZCK.

NEW SOUTH WALES

Hunter Branch: 52 Mc.—No DX has been worked so far from the Newcastle district but Hunter Branch members 22ZG and 22ZL worked near Macksville. 22ZL worked to JA on Nov. 8. The JAs were worked from the Sydney district at the same time.

Frank 2ZFX is back on 6, also Kev 2ZKW had a few QSOs on the net each Saturday and Sunday mornings. Stewart 2AYF, Bill

2ZWM and Mac 2ZMO are the mainstays of the net with odd ones coming in to test their gear.

144 Mc.—Some fair openings have been made to Sydney, mostly on 144 Mc. but have been in 5 x 8 both ways. Bob 2ZGU hopes to be on the band from Raymond Terrace with a 3/12 final. 2ZFR has been to Darwin that many times with the Air Force, he should know his way around. Steve 2AFM and Tony 2ZCT have been hearing signals on 432. 2AYF was able to copy signals from Sydney and play the signals back on tape via 144 Mc. 73, Mac 2ZMO.

VICTORIA

Activity here mainly consists of 6 maz DX with a sprinkling of 2 m to VK1. Reports claim that JA3s have been heard on 6 and ZL4 on 2, but no confirmations have been received. The VK0CR 6 maz beacon has been operating but without its keyer and it is believed to have been damaged in Melbourne. 2AFM will be returning to Melbourne in the very near future and will bring the beacon with him. It is hoped that a new beacon using semiconductors and valves will be ready to be shipped to Macquarie Island in the new year.

The V.h.f. Group will hold Field Days on Dec. 31, Jan. 1 and Jan. 21, also on the National Field Day on 3rd and 4th Feb. Last but not least the VK3 6 maz beacon is on 51.76 Mc. with an aerial power of 20 kw. and about 70 kc. wide. 73 and best DX, Cyril 3ZCK.

Eastern Zone: 52 Mc.—The sporadic E season has started with a bang, and 2ZB opening on 18/11/67 (1915-1935K), first VK opening to VK4, 19/11/67 (1730-1930K), VKs 4ZAZ, 4ZWB, 4ZAL, 4ZBJ, 4ZIS and 4NG, together with VK4 t.v. channels 0, 1 and 2 logged. N.Z. ch. 1 t.v. received again on 20/11/67 at 1840K, and Bris-

bane ch. 0 t.v. 20/11/67 between 1130-1215K and again 20/12/67. 4ZAZ still has 4ZAZ stations also he reported the last JA opening was 15/11/67 and 12/11/67 at midday. "We cannot transmit on 6 maz band here in Latrobe Valley whilst ATVA is on 'air'." 4ZB (baudotie powder) reports JA41GY will be operating by end of November on 50.050 Mc. 8, 10, 15 watts to a ground plane from Mount Ouzza (1000 m. s.w. of Hiroshima, an excellent path to VK). It is not continuous but the transmission is reported to be 100% to JA4AO, Hiroshima (Yamaguchi Pref.). The f.m. net with 50 mobiles is 51.000 Mc. in JA.

144 Mc.—12/11/67 VKs 3ZGA, 3ZCG and 3ZCF. 12/11/67 VK7ZB, peaked 8 9, 10, 11, heard VK7VY beacon, VK6 5C1 3C1, ZFZ-3AEF, 3ZNC, 3ZN2 and 3ZN8. Wonthaggi have been worked by Gippsland stations last month. 73, George 3ZCG.

Western Zone—Roy 3ZYG and Bob 3ARM are on 2 m most mornings and work into Adelaide and surrounding on 144 Mc. between 0700-0800. Active stations in the Zone include Herb 3NN (Yannam), Roy 3ZYG (Kaniva), Bob 3ARM (Servicetown) and Jim 3ZMS (Innaloo). Roy 3ARM (Telecommunications) and Jim 3ZMS (Innaloo) are the best DXers. George 3ZEA (Rainbow) all on 6 and 2 maz, and Lionel 3ZLL (Broughton), Brian 3ZFS (Tarranridge), Norm 3ZYU (Rupanyup) and Bob 3ZKX (Drung) on 2 maz only.

JAs have been heard in the Zone on 5th and 6th about 1300 for about 15 minutes and Roy 3ZYG has been heard on them on the 6th with signals peaking at 8. 73, Roy and Bob 3ARM worked VKs 2, 4, 5 and 6 on 23rd. 73, Bob 3ARM.

SOUTH AUSTRALIA

Don VK5KX has now moved to Darwin and has Jim VK5ESJ, both hear the VK5KX news which is relayed there on 6 maz. Garry VK5ZK will be portable VK2 over Xmas. Last, but not least, the beacons 53.00 and 144.8 Mc. both on 2 maz have opened up. 73, Alan.

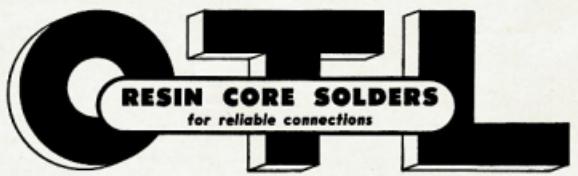
(Will Alec please let me know who he is as the information supplied in his letter is very interesting, but most of it was reported in Dec. "A.R."—Sub-Editor.)

CENTRAL AUSTRALIA

Activity in this part of the continent as far as six metres is concerned is almost nil, except for the continuous line-up of JAs who can be worked for 24 hours every day. Bert VK5HQ in Dubbo, writes, reports that he has not slept for weeks. Divisions have been casting up the number of the number of JAs who appear to have nothing else to do but call him.

As far as two metres goes, you poor devils in the Southern and Eastern States had better immediately convert your G4s to G2s as we up here have been working W/Gs and VEs with monotonous regularity. 73, George VK8GG.

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Publications Committee Reports

The November meeting was held a week after copy date, hence no report in the last issue. At the November meeting correspondence was received from VK3QV/W, VK3ASJ and VK3TB. Technical articles were received from VK5 1AU, 2SJ, 2ZEZ, T, 3ZOM, 3ZWA, 3ZWG and 6ZB.

The Publications manager reported on his discussion with the mailing service, and the steps being taken by them to improve their service. We are still getting many copies of "A.R." returned due to incorrect address. We ask members to advise the Divisions promptly of any change of address and likewise. Divisions should pass this information on to us promptly. Remember, it takes at least two months for us to get our records and such altered, hence you could miss out on several copies of "A.R." if you fail to keep us up-to-date.

A further review of "A.R." costs, as they are affected by the new postal charges, was made. It was decided that these be absorbed until the February issue but thereafter these additional charges will have to be carried by the Divisions.

The December meeting will not be held until next copy date. No correspondence or technical articles have been received up to the 1st December. The fire in the Melbourne Mail Office caused delays in mail deliveries, but all notes received up to Saturday 2nd have been included in this issue. The tight schedule to which we have to work in December prevents allowing for any undue delay. We, therefore, apologize to any correspondents whose notes have not arrived in time for inclusion in this issue.



FEDERAL AND DIVISIONAL MONTHLY NEWS REPORTS

(SEND CORRESPONDENCE DIRECT TO DIVISIONAL REPORTER NAMED AT PARA. END)

FEDERAL

MEMBERSHIP RETURNS

	VK2	VKA	VK4	VK5	VK6	VK7	Month end.	Jun.	Oct.	Sep.	Oct.	Sep.
Life	15	14	—	4	6	7						
Full	297	813	342	372	238	144						
Associate	361	243	119	134	74	78						
Others	16	—	28	22	—	—						
Total	1183	1070	489	532	318	229						

Prev. Total (1287) (1058) (476) (525) (318) (229)

Grand total of full members, 2752, equals 30 per cent. of the total licensees.

LICENSED AMATEURS

(Figures for August, 1967)

	VK1	VK2	VK3	VK4	VK5
Full	68	1312	1118	463	481
Limited	14	411	523	177	223
Total	88	1723	1641	640	704

	VK6	VK7	VK8	VK9	VK0
Full	284	130	18	63	4
Limited	127	75	5	12	0
Total	411	205	23	75	4

Total Full, 3947; total Limited, 1567; grand total, 5514.

FEDERAL CONSTITUTION

Mr. S. McIndoe, of Messrs. Hedderwick, McIndoe & McIndoe, solicitors, has given the following documents and has been asked to present all relevant material to the Attorney-General for approval of the new Constitution. VII: the present Constitution amended to provide for incorporation of the proposed Constitution with the relevant amendments from this year, copies of financial statements for the past three years, and photocopies of constitutional motions from official Federal Council minutes.

FEDERAL TREASURER

Kevin Connell, VK3JARD, has resumed duties as Federal Treasurer and Executive wishes to place on record its thanks to Tom VK321Q who acted as Treasurer during Kevin's absence overseas. One of Kevin's first tasks will be to analyse the Federal Convention expenses from Hobart, and calculate the position of Federal Councillors the extent of any further financial indebtedness as a result of that Convention.

T.V. CASE

In the last Federal Bulletin, reference was made to a t.v. case a recent letter from the Controller, Radio Branch, P.M.G. Department, states: "With reference to our recent discussions about television interference caused by the operation of an amateur station at Inverell, NSW, we have been advised that this matter has now been settled to the satisfaction of all concerned."

A letter from the amateur to his Federal Councillor, forwarded to Executive, indicates that he was involved in some small expense in rectifying the complainant's t.v. receiver. This in itself is very reasonable, but it is the question of determining in each case, looked at separately, what is reasonable in that particular case. It is apparent that the amateur felt that on balance, it was reasonable in this case to pay the necessary expense, while still holding the belief that the amateur should not necessarily be responsible for the expense involved, as a matter of principle.

FEDERAL AWARDS MANAGER

Bill Hoppe, VK3AHO, our recently appointed Awards Manager, has indicated to the Federal President that the amount of work is increasing very rapidly, this fact coupled with increasing work problems and domestic difficulties has resulted in a backlog in the issuance of certificates etc. Bill has assured that Executive relieve him of the position of Awards Manager, as soon as possible, but in the meantime, he will carry on as his time permits. Executive is therefore looking for a successor to Bill in this office.

INDONESIA

Executive has been in correspondence with the P.A.R.I.—Persamaan Amateur Radio Indonesia—(Indonesian Amateur Radio Union) and other Indonesian Amateurs who have written asking for assistance. P.A.R.I. states that "After years of work, the Indonesian Amateur is now allowed to go on the air again." Indonesian Amateurs have been worked, but still using the PK8 prefix rather than the 8P prefix. Executive has taken steps to verify this operation, and to ascertain the status of the P.A.R.I. as the name of the licensing authority, etc. is quite a deal of material such as back copies of "A.R." copies of Handbooks (s.a.b., v.h.t., etc.), call books, Stanford Research Institute spectrum Y.L.S., course catalogues, QSL information, etc. have been sent to P.A.R.I. and others. Some of this has been sent by the Federal Secretary personally to individual Indonesian Amateurs with the result that I find my own library somewhere deposited. Please remember Y.L.S. is an unwanted copy of the January and July issues of "A.R." The publisher is out of these, and so am I! Please?

INTRUDER WATCH

The following paragraphs from a letter received by Federal President from the Hon. Organiser of the Intruder Watch, may be of interest to members:

"When the presence of an Intruder station is confirmed, the G.P.O. sends reports to the administration concerned and this usually does the trick. Intruders that have been moved recently include Radio Pakistan, 7000 Kc. RAY 1 (predicted 21044 Kc), RKA7, Moscow (Facsimile, second harmonic of 10711 Kc.), 21422 Kc., EGD Tirana 7019 Kc., ZAG Tirana 7691 Kc., Radio Monte Carlo 7083 and 7097 Kc., Radio Tirana 7090.

Our biggest problem is Radio Cairo who has three frequencies in the 40 metre band, and, on one copy, Radio Peking who has eight frequencies in the 40 metre band. Repeated letters to Peking usually result in a letter being received pointing out that as they are not a member of U.N. they are not bound to stick to frequencies laid down by I.T.U. convention."

T.V. REPEATER STATIONS IN QUEENSLAND

This month a request for investigation of a report from a visually reliable source that a t.v. repeater on Crows Nest, to be established in the Nambour area, was received by Executive. Consultation with Central Office P.M.G. Department, indicates that the Nambour channel is planned as at now. It would be appreciated if members would investigate such matters were supported by names, dates, places, etc., rather than the rather nebulous "usually reliable source."

JAMBOREE-ON-THE-AIR

Advance information has been received that this activity will take place in 1968 on the weekend of 19th and 20th October. It appears that this year less stations participated, perhaps because of the earlier date, so 1968 has returned to the more usual mid-October weekend.

MEMBERSHIP

As can be seen from the first item in these notes, our full membership hovers around the 50 per cent. mark still. It is known that some members have not paid their fees for a year, perhaps it is relevant that A.R.R.L. in their latest Annual Report, indicate that there has been an increase in their membership. They send each new licensee a "congratulations" mailing, and a follow-up mailing stressing the value of "QST," etc., to the newcomer. There

SILENT KEY

It is with deep regret that we record the passing of the following Amateurs:

VK2PV—Peter Vesper
VK4BH—Harold Brown

appears to be about a 20 per cent. overall effectiveness of this procedure, also experimentally QSL Bureaux sent out membership blanks with information on League services with cards to non-members. In addition forms are always enclosed with replies to queries from non-members.

MAGAZINE SUBSCRIPTION RATES UP

Dick Ross, K2MGA, Editor of "QO" magazine, indicates that as a result of increased postal charges and printing costs, they have been forced to make the first rise in subscription rates in eleven years. The sub. will rise \$1 p.a. effective 1st March, 1968.

FEDERAL QSL BUREAU

Gene Krulich, W6QVN, in forwarding QSLs dating back many years, adds that he is returning to sea as Sparks after an absence of 18 years. Will be active as maritime mobile.

The results of the U.S.S.R. 50th Anniversary of the Revolution Contest, 1967, contains the following VK stations, both of whom won certificates and medals: VK3AXX 8718 pts; VK3APN 732 pts.

The disastrous fire in the mail exchange, Melbourne, on end of November, destroyed 200 boxes of incoming QSLs. It is believed that many incoming QSL despatches would be amongst the contents of the destroyed mail.

John VK4HGG closed down on Willis Island on November 16 and has returned to VK3. His replacement at Willis is not a Ham. John was taken delivery of all accumulated QSLs and promises to reply to all in a little time.

—Ray Jones, VK3RJ, Manager.

NEW SOUTH WALES

COUNCIL NEWS

Council activity over the Christmas holidays was limited so there is little to report. Council remains members of the Convention during the Christmas Day weekend. Details of the Field Day and its location can be obtained from the Divisional Bulletin and VK2WI broadcasts.

President Ken Finney has invited critics of the Council or its officers or other administration to submit their criticism to Council in writing and will be replied to. Recently the only letter so far received, Ken advises that a statement will be published in the Bulletin.

CONVENTIONS AND FIELD DAYS

It is understood that several Conventions and Field Days were held in N.S.W. late last year. As no information has been received of the Field Days, I assume they are of no interest to readers of "A.R."

NOVEMBER GENERAL MEETING

The November general meeting was held at Wireless Institute Centre on 24th and was well attended. The meeting was opened by President and Chairman, Ken Finney, and the brief formal business conducted included the acceptance of quite a number of new members. Visitors were JA1INDO and ZS6BJ.

The lecture for the evening was given by Mr. Peter Stokes, D. 12, and is called "Making Waves in the Beautiful Countryside." In explaining this odd title, Mr. Stokes read a quote which said that Italy was a beautiful country. In his explanation, he said that during a visit to the north of Italy he was asked if he thought that beauty was a matter of opinion. Mr. Stokes then showed many slides of this part of the world and included some fine shots of Venice. The many slides taken were of excellent quality and were enjoyed by all. The vote of thanks given by Bill 2YB was appropriately carried.

The lecture set for January is on Log Periodic Antennae and will be given by Dr. Guertler of the University of N.S.W. The lecturer is recognised as an authority on this subject and will include the amateur aspect in this lecture.

W.I.C.E.N. NEWS

Arrangements are in hand to hold an exercise in the Orange-Parkes area of Orange district members. Some Sydney members will most likely take part. Details will be given in Sunday broadcasts.

T3, Stan ZZRD.

HUNTER BRANCH

My faith in tinfoil lined jars, columns of mercury and all that has been shattered since I attended the Branch lecture on Friday, 3rd November. According to Barry VK2ZAG all the theories I have heard and read on the subject of components are wrong. I must agree. Having done battle with the Department of Main Roads on National Route 1, all blocked with landslides, members and the rest, one would have thought that Barry would be loth to enter into discussion with the representative types at a Branch meeting—but he did, and he convinced the members and visitors of the quality of his firm's produce in no uncertain terms. Barry says the white type capacitor is best for certain applications, which resistor is best for certain applications, which diode is best for certain applications, which...

Much to the delight of all we in this part of the country news has been received that the Branch as we have always known it, now exists. The area as shown on the Hunter Valley Research Foundation's map has been accepted by the Division as the true boundary of the Branch. The name and boundaries were inaugurated by the late Jim Corbin; it has been generally assumed that the boundaries of the valley were the limits of the Branch. Now according to word received from Sydney, we are agreed with Divisional that this move will make my readership grow, but, nevertheless, so all is well. I doubt that this move will make my readership grow, but, nevertheless, I can always say I tried.

Now that six metres is coming good again the boys are having an almost continuous field day on this once neglected band. Henry ZZGK reports the most frustrating experience of having heard all the VK7K's in the area, but not being able to copy any; and in balance the book. Kev ZZKW reports the ultimate in timing. Apparently it so happened that Kev had invited some friends who had come from the old days—right at the moment you approach—i.e. visit—them, to see what this Amateur Radio lark was all about. Well, they duly arrived and as Kev says, "Knowing that it's always too noisy, or too dead on the bands to ever have a contact when the visitors arrive, I had them sit there the old story of how good it was last night, or on two metres, or whatever, when six came good." Conditions were so good that Kev amazed his friends by having an hour long talk with SLO on the next evening. 5 and 10 were the only events reported to be doubly pleased since only two nights before, his Club, the Maitland Y.M.C.A. Radio Club, had put on a prize-giving night and social for all his hard working members, and had won the 1968 S.M.S. and S.W.L. awards. Jack Flynn, VK2 Secretary of Y.R.S., did the honours with the incentive packets for the Elementary candidates and guests who gave out the S.W.L. prizes. Not right again, old dial-thru's friend.

Only one of them was winning—too much cake afterwards to re-inflate my newly slimmed 17 stone figure. On the temptation!

With typical 2XTT ingenuity, Bill from Toronto has devised a new sort of beam called the umbrella quad. Although not sure of whether it's absolutely original, one thing is certain. It works like a charm. Recently he sent me a copy of a 23 JAe in December '67, 15 without lifting a number 12 fuse, but that's another story. And all this time the beam was only six feet off the ground. What will happen when it gets up to the top of that tall pole in the back garden is anybody's guess.

If you ever go across the seas to Hamilton South just look in at the pill pouchery of Ian ZZIF, but make sure you've got your binary logic all in order, for there you will see something really weird. You will be told you all about it didn't you? Well I'm sworn to secrecy just now but I am a friendly zone correspondent—I accept bribes. So if you can't get along to see ZIF, a well placed contribution in this direction will bring the desired result.

A horrified look crossed the face of a well known v.h.f. man the other night when he was asked to repeat the words, "You may have the negative of this picture, a large sum of money I can tell you. Great was his relief when he found the picture was of himself quaffing an ale at the recent Bolton Point Inn. Days later in telephone talk from most reliable source I have it that Belmont Bob, 2BOB, is mobile. Our old bachelor pal,

John 2ZBD, has left the security of his former days and taken unto himself a wife, so they say. So that's what the Army did for him. Up to the moment, Mr. ZZD's beam hearings have had to be water-cooled since the season began. John 2XQ has been heard back on the air with a huge signal and I've sent Don 2BAE a QSL. Surely 1968 is having a serious effect on us all.

All you keen types who rushed off to the January meeting of the Branch and found me one there you're reminded that the next meeting will be on Feb. the two. That's a Friday, by the way, and we hold all general meetings at Rockdale, on the site of the Clegg Building, Newcastle Tech. College, off the Great Hwy. Some sort of wondrous interest has been planned for that night but, since nobody has told me what it is, I'm going along to find out. With a bit of luck I'll be there on time, my New Year resolutions being to try to arrive a little earlier. So maybe I'll see you, T3, 2AKX (and it's sure to be great in '68!).

CENTRAL COAST RADIO CLUB

Friday 17th saw the November meeting of the Central Coast Branch, with the topic of the lecture being "Electrical Developments in Civil Aviation". Mr. Vaughan Wilson, 2VW, gave a very interesting outline of the developments in civil aircraft communications from its infancy in Australia to the present day "revolution". The talk has been on the progression from simple communications using Morse, development of distance measuring beacons, to the various sophisticated navigational and communication aids of today. The session closed with an active question time, and a vote of thanks to Vaughan for his talk. T3, 2TS.

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VICTORIA

Victorian Divisional Council met on Monday, 27th November. Apologies were received from 3FE and 3ZEL. Visitors to the meeting were the new Secretary, 3OR, with his assistant, 3ZD, and 3ZRN.

Once the routine business was finished, Council considered a report on the W.I.C.E.N. vehicles, and a request for additional funds to complete the project. After lengthy discussion, Council voted an additional \$200 to this project.

Next 3ZQ then explained that those responsible for the 6 metre beacon at Macquarie Island wished the W.L.A. to approach the P.M.G.'s Department for the allocation of the call sign VK0WF, rather than having to use the call sign 3WZB. 3ZQ was given information on what details the Department would require, and once this information is available, the Federal Secretary undertook to approach the Department.

The Federal Secretary reported that the VK2 Federal Councillor had queried the establishment of the W.A.V.N.P. and W.F.A.N.P. by the Victorian Division and how they were affected by the Federal Policy Book. Examination of the Policy Book showed nothing on the subject and that no infringement of Federal policy had taken place.

The Divisional President reported having contacted various motels in the Bairnsdale/Paynesville area and made reservations for the State Convention. The Convention will be held at the Len's Bird (capacity 150 people) for the week-end 9th and 10th March. It was resolved that all zone secretaries be advised immediately that the State Convention will be held over this weekend. The week-end was selected as no zone had intimated that it was holding its Convention at this time.

WANTED URGENTLY

A.O.C.P. CLASS INSTRUCTOR

Commence duties third Tuesday in February. For details, remuneration, etc., contact Secretary, Victorian Division, W.I.A., 478 Victoria Pde., East Melbourne, 3002. Telephone 41-3535.

Our Secretary reported on the successful resumption of the 40 metre a.m. broadcast. This broadcast was resumed without any prior announcement and the response to the first call was most gratifying, especially from country areas.

The representatives of Federal Executive spoke at length on their proposals for Region III. (see November "A.R.") but as F.E. will be reporting at length on this subject in due course, no report will be made in these notes.

Federal Councillor reminded the meeting that the appointments to Federal Executive were to be made at the December meeting and invited all members of Council to give thought to this matter prior to the next meeting.

The I.T.U. Fund is slowly crawling towards the target figure. Donations have been received to the following: 10D, 3AG, 3SS, 3-2ZV, 3RM, 3ZB, 3ZD, 3ZOR, 3DX, 3PZ, 3ZC, 3ZM, 3ZN, 3AUN, 3ZDG, 3AWZ, and 3ZD: 31-3AVY, 3AZG, 3ZMV, 3EM, 3LC, 3ZV, 3AUM, 3DU, and 3ZSS; 30E—3LK and 3ARO.

Membership of the Division continues to grow and the following people were accepted by Council and recommended to the December general meeting: VKs 3AUN, 3AZJ, 3AV, 3ZHN, P. 3ZL, A. Doyle, P. H. Lile, S. G. Mizon, R. Muir, K. A. G. Oakley, J. Reynolds and D. van Silkan.

As neither Mrs. Bellairz nor Mrs. Mackie is able to attend the office during the school holidays, Council agreed to engage temporary help to perform the M.R. D. Hurt will be in the office during the school holidays and will do her best to keep the wheels turning. If you do not receive the usual high standard of service please bear with her, as she will come in as a "raw recruit".

WESTERN ZONE

Bill 3ZAX has been caravanning in VK5, operating portable on 6 and 2 m. Roy 3ZYG is the only zone member known to have worked JAR during a recent short opening. Both Roy and Bill 3ZQ worked five States in one day on 6 m. Last weekend Roy 3ZYG had a quick trip around Australia. Ray Leskie and family are at present enjoying a well earned holiday in VK3 after which they will be returning to Missing Man in G. for 12 months. Ray will be using a PL2000 a.s.b. transmitter with a PL2000 linear and receiver for contacts with Western Zone members.

Roy 3AOS reports good conditions on 10 m, 5/9 sign to the U.K., also Denmark and Germany. Roy uses a 3 el. yagi 76 ft high. Tony 3ZL is continuing work on the first amateur business—no extra costs. Tony's 3ZM is trying to tame a 6/40, so he can get back on 2 m. Herb 3NN and Gary 3ZOS are pleased that the S.E.C. have started the extension in their area. Passers by in Firebrace St. Horsham, recently were informed to "see a 50' antenna on a car. Two spics were listening to the varied comments. "Look t.v." "No, it's a telephone!" Roy 3ZYG was attending the Zone Convention. T3, 3AU, 3AR.

ESTERN ZONE

CQ Eastern Zone. The first notes for 1968. The President and I wish all Zone members and other readers the compliments of the season and a happy, health and prosperity for 1968. A good 6 m DX session was had on Sunday, 24th Nov. last to VK4. New Zealand to see and heard the first evidence of 26th Nov. last at 3ZCG's QTH. The Zone has quite a number of S.W.L.'s, one, Ken, has got his 3rd class commercial ops. cert. We hope to get some of them to associate members of the I.A.R.U. 3ZCG's lecture to the Latrobe Valley Air Cadet Corp every Friday evening. Keep it up Geo. I am interested in the Intruder Watch which is being inaugurated by Federal Council. Sorry no news for the N.S.W. Division, but the construction of two metre converter, this last month, so have lost touch. That's all there is chaps for this month. T3, best DX for 1968, Albert Cash.

QUEENSLAND

IPSWICH AND DISTRICT RADIO CLUB

Christmas comes but once a year, the old saying goes, and thank heavens, some of our club members have added. By now the elderly grey-haired, long-bearded red coat will have visited all the club members and I hope he has been most generous in what he left. According to what was left in my stocking, he gave a reindeer somewhere but a quick check around the shack has not located "Dasher" yet.

Several club members attended the Hamfest at Kingscliff last month and a good time was

had by all. A number of VK2s were met and a lot of old VK4 acquaintances were seen. Two old Ipswich identities, namely Bill AWS and Ross ZATZ, attended and it is mentioned that both may be present at one of our club meetings in the near future. Ross had a transistorised excited 6M which attracted a great deal of interest. Ross used this excited to contact our club members on the way home. While passing through Tweed Heads, several of our club members contacted VK3s coming in on the break-through.

The club's annual dinner was held on Dec. 13 and approximately 30 members and YLs attended. After the dinner a social evening was held and supper was served. The club will not be going into recess this year as usual, because the majority of members will be absent at Christmas so the meetings will be held normally.

Cyril 4CR has now received his call sign and has been giving it a fair airing, believe his first contact on 40 m was with Andrew 4AT. Andrew was not just about due to qualify for a class certificate, he has contacted almost all our club members.

It is with deep sorrow we report the passing of one of our ex-Ipswich Hams, namely Harold Brown VK4BH. Although Harold was not a member, he lived for a number of years in Ipswich and was very active here with his old call sign, 4HG. He moved to Brisbane and acquired his old original call sign, 4BH, which was originally taken off him to be given to a commercial station in Brisbane. To Harold's family, all club members express their deepest sympathy.

Club President Ron ARG has been busy setting up crystals to suit our new 8 m and 14.2 M. bands. He has even started the frequency for a few kc and an attempt to lead it up was not too successful. Ron now has three crystals and none are on the net frequency, also it appears he needs two new crystal holders; these do not need to be as large as the original holder.

The camping fraternity will have a field day over the New Year week-end with a camp out at the river near Ipswich. There is a possibility of a power failure in the 260v. generator is finished in time, if not it may be batteries for the power supply.

All members of the Ipswich and District Radio Club have asked me to wish all the readers of "A.R." a Happy and Prosperous New Year, and good DX. 73, Warren 4GT.

SOUTH AUSTRALIA

The monthly general meeting of the VK5 Division for November was held to an average attendance of members and visitors. The heat of the day only seemed to add to the interest of the meeting. The guest speaker for the night was Mr. Brian Chase, of Phillips Electrical Pty. Ltd., who chose as his subject, the design and manufacture of printed circuit boards. Mr. Chase gave an interesting and informative lecture and produced an endless supply of samples of the craftsman's work to illustrate his point, and all in all, members were given an up-to-the-minute talk on the production of the printed board by a local manufacturer who doubtless knew his subject, and one who was prepared to answer any questions on the subject. The vote of thanks proposed by Ross SKS and the applause that followed, was a clear indication of the success of the lecture and again showed how lucky we have been this year with the standard and entertainment provided.

The business section of the evening then followed. A letter was read from the Electrical Workers and Contractors' Licensing Section which made it quite clear that no grade of licence would be available to Radio Amateurs as such, and whilst it is intended to take up this matter with the Minister, it is already made to be safe, said that there is not much hope of success. This is a complete somersault from what we were given to believe when we had our interview with the Minister concerned, but it is not over than Northern Territory Council is going to let the minister drop it yet, although it now appears as a waste of time to get us a grade of licence, try as hard as we like.

No general business, and very little general business brought the meeting to a somewhat early close, although when I left the members were still clustered around the samples of printed circuit boards still on display.

Noticed Uncle Joe SJU, from Whyalla, at the meeting. He had just been down on business, and all I can say is that the boy that is shrewd enough to engineer a business trip that coincides with a Divisional meeting night, is sure some business man.

The annual picnic went off with a bang, over 600 strong attended, and a jolly good time was had by all. Although this

picnic is organised by the V.H.F. gang, judging by the number present it is almost a W.I.A. picnic, and while the group are to be congratulated on their efforts, I believe a special mention must be given to Bob SZDX for the hard work that he puts into this annual event.

The attendance of the Associate members was excellent, so the point and as usual mentioned up at Geoff's (STY) QTH for a little refreshment at the close of the meeting. This made good reading, because with our high Associate membership numbers, 1000 and 1100, we could all come for them, but it is a little hard to do this if we don't hear from them just what they would like us to do. So, go to it boys, say what you want, and Council will try to obliged.

Claude 5CR and I, also YL, came down on a visit to the City of Culture and called in for a short visit, short from Claude and my reckoning, we never get enough time to discuss everything that should be discussed. I thought Claude was slightly leaning towards "The Thing" in his conversation, or should I say a slight leaning towards what appears to be the inevitable to Claude. A sorry state of affairs. Nice to see you both.

Underneath the Smart SWS is off on a jaunt to W-Land, in the near future, to see his daughter who resides over there. I have written to him to see if he wants anybody to carry his bags on the trip, but as far as I have been out of touch with him. The other day I arranged a trip for a certain VK2 YL, I got my husband mixed up and instead of carrying her bags, I spent a week or so in my hills hiding and waiting for the consequent up roar to subside. 100 bags on deck.

One piece of good news for this month. One of my espionage agents from the S.E. tells me that Kevin 3AKR has crossed the border and has become a VK5 resident and is now rumoured to be here. He eventually got out a VK5 call sign. That is one of them that has seen the light, willingly or unwillingly, and it will help to keep Pincock (3AFJ) off its toes.

Gordon Danks, from Mount Gambier, has applied for Associate membership in the VK5 Division, and will be more than welcome. He is as keen as mustard on the hobby of Amateur Radio and when he returns from a prolonged stay in the U.S. he will be right down and get his ticket. Good to hear it Gordon. What about a QSO when you come on the air. What's that? Don't you believe it? I am always on the air. Beacon Parsons from Bell will be there.

Colin 5XY—my favourite doctor—is off on a motoring holiday to VK3, accompanied by his charming bride, Sally, and upon his return will take up residence at Eudunda. The last time I contacted him was when I was at my holiday spot at Oakbank, and I was introduced to Sally at the same time. Best of luck and good wishes for the future to you both. That should get me a free check-over—or something.

Carl 5SSX had dithering about water divining on 7 Mc. the other early evening, apparently he had been looking at the same session on t.v. that I had, and was offering to locate water for anybody and everybody, anywhere and everywhere. I told him that I had no desire to do the divining, but made it plain that he would have nothing to do with the digging part of it. How shrewd they get?

Frank SMZ appeared very interested in the divining lecture mentioned above, but was quite definite that he would have nothing to do with the digging part of it. I hope these blokes think they are going to get water without digging for it beats me, anyway, with Frank almost on the brink of giving hard work away and putting his feet up. He certainly won't be interested in getting a pin or shovels unless it is to whack Carl on the bokko every time he comes to light with some way or other of leaving the easy chair. See you on 14 Mc. c.w. some afternoon Frank! or will that be too energized?

Have you heard the story of the Radio Amateur who dreamt that he went to a country convention where, at the door of the hall, he was told that there were to be a pick a piece of apparatus from a big box, and what's more, were allowed to keep the said apparatus and take it away with them. Well, it goes without saying that all of the visitors lined up to take a look at the box and our hero, well to the fore. The first visitor said he would take the mod. transformer, and was handed this with an extra gift of two bottles of beer. The next one took a broad band receiver and two bottles of beer, and this was followed by a third who took a linear amplifier, plus two bottles of beer—and so on, and so on—until it came to our hero who discovered to his amazement that at the bottom of the box was brand new "thing". He never fell over backwards to pick "The Thing" and

was also handed two bottles of Coke, which caused him to put on a grins to all concerned. "What's the idea of this?" he said. "Everybody else gets a bonus of two bottles of beer and I get two bottles of Coke with "The Thing"!" The entire gathering stood in silence.

"This" is better with Coke!!!! Okay, okay, it was good it was good, and anyway it gives me an extra paragraph. I have no conscience!

Passing an outdoor fetes the other day, which incidentally was being run under the auspices of the Clarence Park Kindergarten, with a vehicle plainly marked with the "Batman" sign, with Batman and Robin in attendance. Doing a little snooping, I discovered that some of the local VK5 boys were lending their aid toward a worthy cause with Max SGF providing the s.e. set-up, Geoff STY was attending to the general running of the works, and "Batman" driver proved to be SZEZ. The Kindergarten hall being rented by the Division at times for meetings, apparently some body was engaged in some public relations, which was appreciated by the Kindergarten Committee.

Uncle Tom STL has just returned from a fishing holiday at Kangaroo Island, with a good time being had by all. In view of the fact that no sunburns were had, we have found the way to my QTH. I cannot give him a grading in the piscatorial art, but if he tried his wiles on the poor unsuspecting fish in the same manner as he tries to dispose of his W.I.A. publications to the members, then I would say with no hesitation in giving him the "A" grade belt!

Understand that at a recent W.I.C.E.N. exercise there was a little confusion due to a mixup in the destination of the opening session. The 146 boys had planned to do the 53 gang spent plenty of time kicking their heels. I can just imagine the antics of Simon Legree (STY) as all this went on. I will bet his recent visit to the school of modern language paid off!!!! Anyway, the barbecue following the exercise, was to sort out a few things. Always remember fellows, whilst his mouth is occupied chewing, he is as meek as a lamb, or as docile as a sausage. Get it? Meek as a lamb etc.—barbecue—okay, I thought it was original.

Probably as a result of indoctrination (brain-washing to you), Max STU, close associate of Neil SWN, embarked on the project of building The Thing. As Neil has been on a similar project for some time, the finger of scorn can apparently be pointed right at him!

A little bird tells me that the "Disposals Committee" is thinking of a new title, in view of the fact that disposal items seem to be a bit of a misnomer. I hope that they have done such a grand job under that title in the past that I feel the old name should stand. Anyway, as chairman, Gilbert SGX will come up with an appropriate name. He possesses that "how you much" ability, doing the right thing. Thank you, Gilbert! That should get me some more sweet pees!! Or at least some for the XYL.

Incidentally, the VK5 Division has acquired another badge, the Infra-red badge, suitable for placing on the rear window of cars, always providing that they do not obstruct the view of the rear vision mirror. They can be obtained from the Publications Officer, Uncle Tom to you, at a very reasonable price, but don't forget they are a transfer, not a sticker.

Quiet but thoroughly efficient work is being done for the Y.R.S. activities in VK5 by John SJU, who has been instrumental in contact the leaders of the various clubs during his travels around the different parts of the country. This is much appreciated by the clubs concerned, as visits from the city executives are few and far between, due of course to the distances involved.

Reg SRR has not been very active of late but appears to have shaken out the spider webs from the gear, repaired the antenna, and a couple of other things with the result that he is now able to hear very nice signals. He has tried to operate from his business premises without much luck, mainly on account of it being in the bottom of a gully. By the way, he claims that he is working harder now than he ever did, than he ever did before. More power to you, Reg.

Phil SNN, the protector of "The Thing", to you, called in to see me the other evening, ostensibly to lend me a couple of R.S.G.B. magazines, but actually to give me a list of newcomers to his room. I thought he was acting a bit hasty, or probably carrying away with his success in recruiting to his cause. But all was well, he only had a stiff neck, brought on by too much lawn mowing. We'll see you again, Reg.

Heads up SRO in contact with a station which was maritime mobile, but in a slightly

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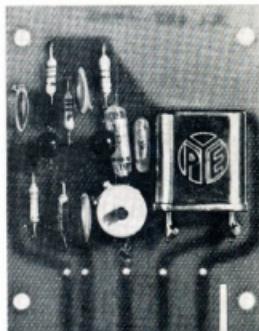
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